ALPINE®

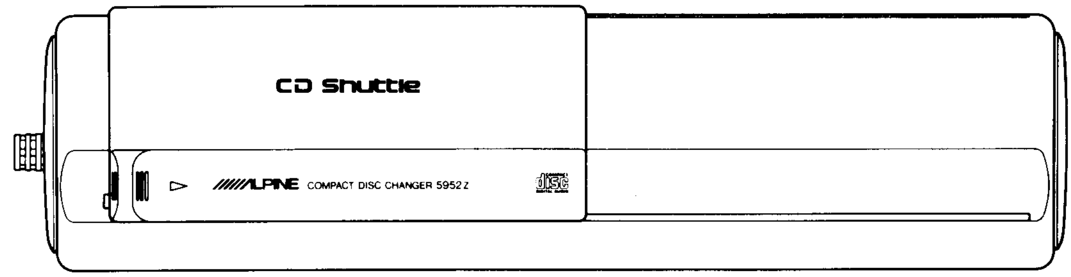
SERVICE MANUAL

Compact Disc Remote Changer

CD Shuttle

COMPACT disc DIGITAL AUDIO

- The model described in this manual is developed from Model 5957S. For information that is not mentioned in this service manual, refer to the Service Manual 5957S (68P41921W01).
- For the CD changer mechanism parts (DR24A040) of this model, refer to the Service Manual • DR Series (68P30571W03).


CD Shuttle
ALPINE COMPACT DISC CHANGER 5952Z

5952Z

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Specifications
Operation
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Adjustment Procedures
Adjustment Locations
Description of IC Terminal
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— Refer to the Service Manual 5957S (68P41921W01).

FEATURES

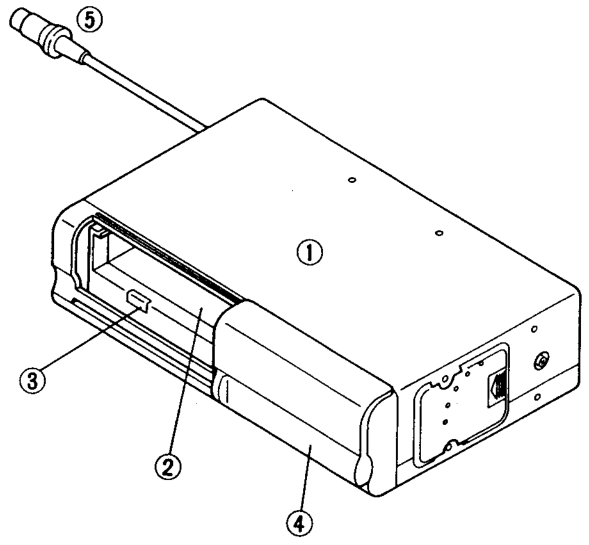
The 5952Z incorporates the latest technology with the following unique functions and features:

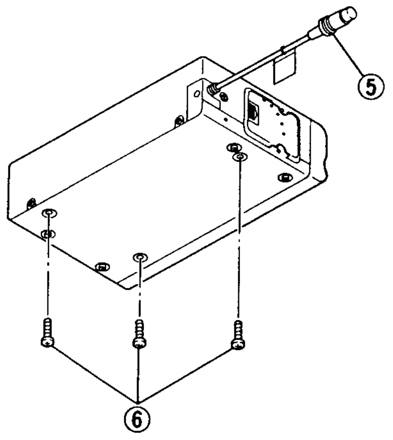
- **CD Shuttle MOUNTING VERSATILITY**
  The space-saving CD Shuttle can be mounted in a horizontal position, vertical position or one of the other three preset angles between 0° to 90°. This allows the installer to choose from a variety of mounting locations including: the trunk, under or behind the seat, or the glove compartment.
- **8 TIMES OVERSAMPLING DIGITAL FILTER**
- **HYBRID I-DAC**
  Alpine's 20-bit Hybrid interpolative DAC combines 1-bit D/A conversion technology (for excellent low level linearity) and a multi-bit D/A converter (for best Dynamic Range, Signal-to-Noise Ratio, and lowest distortion and noise characteristics).
  The result is flawless, accurate performance, outstanding resolution and detail along with superb Dynamic Range.
- **MAGAZINE HOUSING 6 CDs**
  Six 5-inch (12 cm) compact discs can be housed in the CD magazine and selected by operating your control unit. You can access any one of the 6 CDs in the magazine quickly and easily for playback of an entire disc or individual selections.

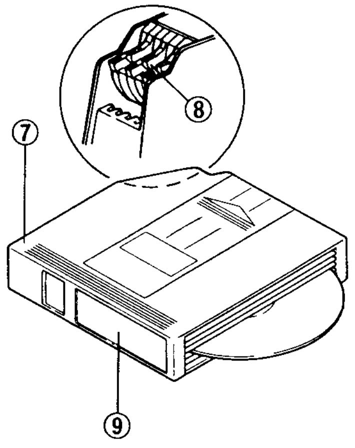
IMPORTANT NOTICE

This compact disc Shuttle has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules. This equipment generates and uses radio frequency energy, and it must be installed and used properly in accordance with the manufacturer's instructions.

PARTS IDENTIFICATION

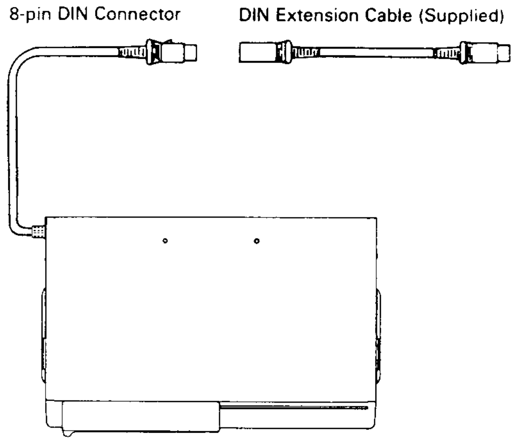






① **CD Shuttle Unit**
② **CD Magazine Insertion Slot**
③ **Eject Button**
Press this button to eject the CD magazine.
④ **CD Magazine Door**
⑤ **8-pin DIN Connector**
⑥ **Shipping Screws**
Must be removed before operating the unit.
⑦ **CD Magazine**
6 discs can be housed in this case.
⑧ **Disc Lever**
⑨ **Disc Index Labels**
Put the Index Label on the CD Magazine.

CONNECTIONS



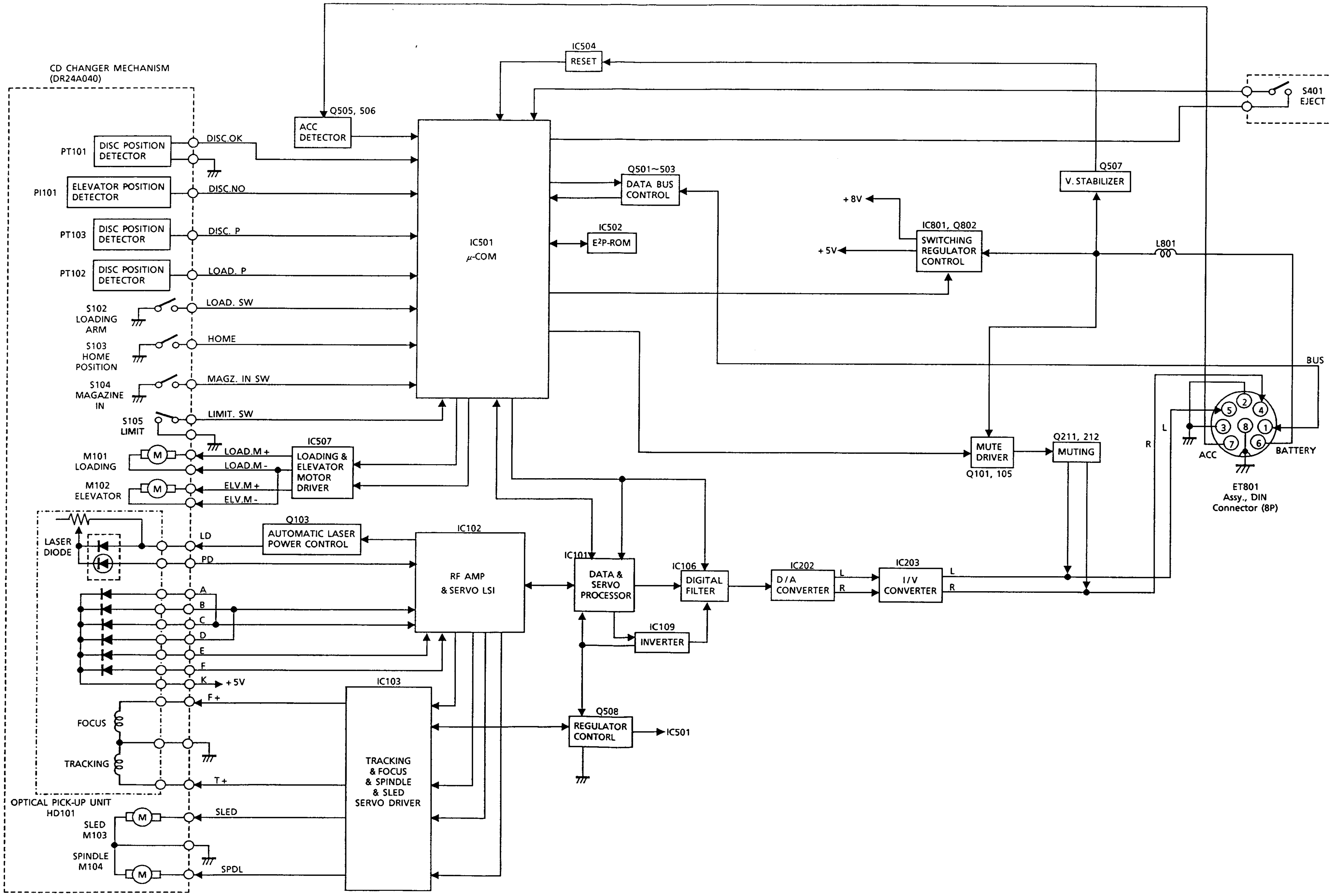
(Top View)

The 5952Z CD Shuttle is not equipped with built-in control unit and power amplifier. Consult with your authorized Alpine dealer for connections of your control unit and power amplifier. Refer to the illustration above for connections of the Shuttle.

NOTE:
The 5952Z is designed for 12-volt DC negative ground operation so make sure that your vehicle has this system before making electrical connections.

8-pin DIN Connector
Connect this to your control unit or changer control input of your Alpine Shuttle-ready head unit.

Block Diagram


CD CHANGER MECHANISM
(DR24A040)
PT101
DISC POSITION DETECTOR
PI101
ELEVATOR POSITION DETECTOR
PT103
DISC POSITION DETECTOR
PT102
DISC POSITION DETECTOR
S102 LOADING ARM
S103 HOME POSITION
S104 MAGAZINE IN
S105 LIMIT
M101 LOADING
M102 ELEVATOR
LASER DIODE
FOCUS
TRACKING
OPTICAL PICK-UP UNIT HD101
SLED M103
SPINDLE M104
M
DISC.OK
DISC.NO
DISC. P
LOAD. P
LOAD. SW
HOME
MAGZ. IN SW
LIMIT. SW
LOAD.M+
LOAD.M-
ELV.M+
ELV.M-
LD
PD
A
B
C
D
E
F
K
+5V
F+
T+
SLED
SPDL
Q505, 506
ACC DETECTOR
IC504
RESET
IC501
μ-COM
Q501~503
DATA BUS CONTROL
IC502
E²P-ROM
IC507
LOADING & ELEVATOR MOTOR DRIVER
Q103
AUTOMATIC LASER POWER CONTROL
IC102
RF AMP & SERVO LSI
IC103
TRACKING & FOCUS & SPINDLE & SLED SERVO DRIVER
IC101
DATA & SERVO PROCESSOR
IC106
DIGITAL FILTER
IC109
INVERTER
Q508
REGULATOR CONTORL
IC501
IC202
D/A CONVERTER
IC203
I/V CONVERTER
L
R
+8V
+5V
IC801, Q802
SWITCHING REGULATOR CONTROL
Q507
V. STABILIZER
L801
S401
EJECT
BUS
MUTE DRIVER
Q101, 105
Q211, 212
MUTING
ACC
BATTERY
1
2
3
4
5
6
7
8
ET801
Assy., DIN
Connector (8P)

Parts Layout on P.C. Boards and Wiring Diagram (2/2) All P.C. Boards viewed from soldered side.

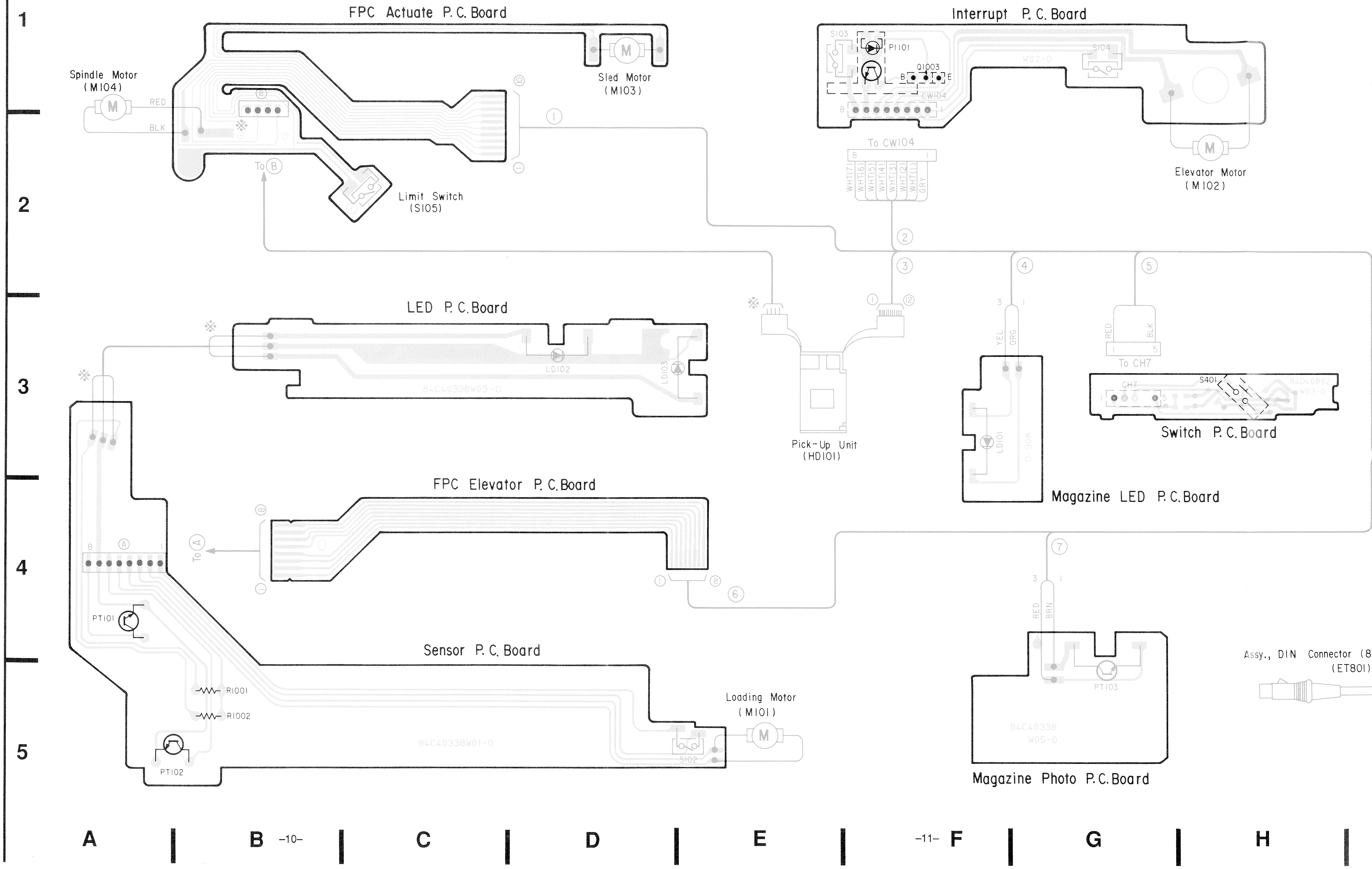
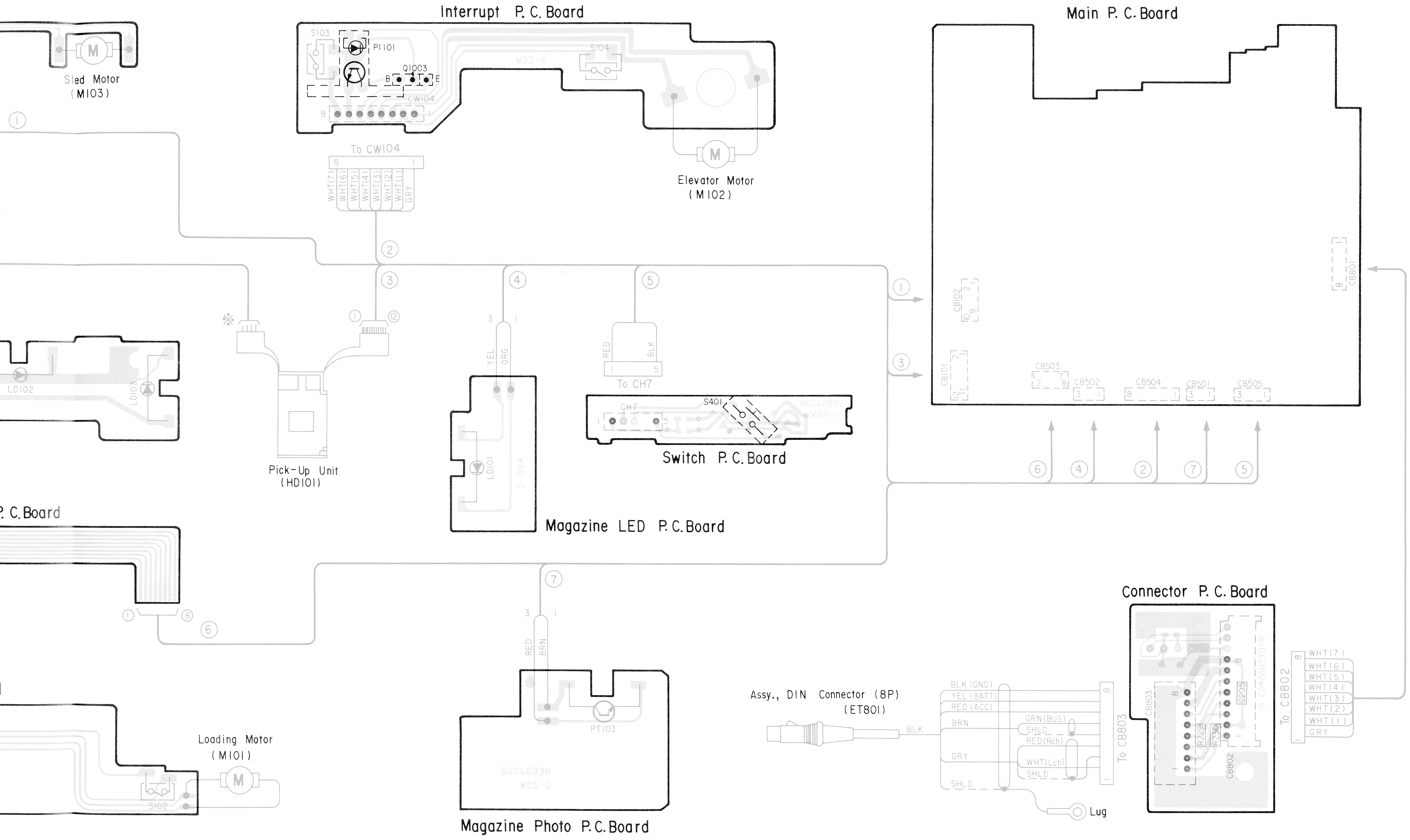
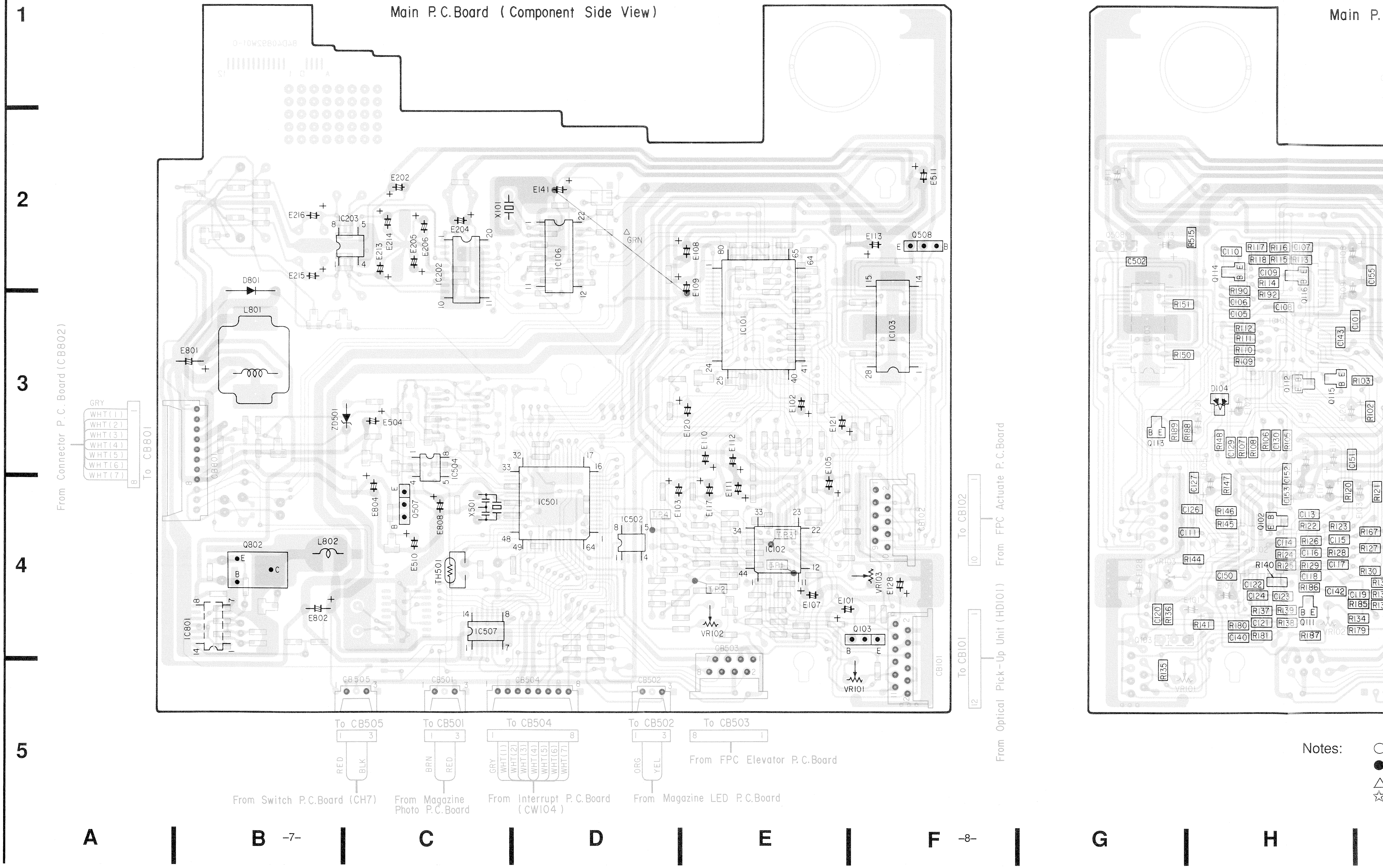

FPC Actuate P. C. Board
Spindle Motor (M104)
RED
BLK
Sled Motor (M103)
Limit Switch (S105)
To B
Interrupt P. C. Board
S103
P1101
Q1003
B E
S104
W02-0
CW104
Elevator Motor (M102)
To CW104
WHT(7) WHT(6) WHT(5) WHT(4) WHT(3) WHT(2) WHT(1) GRY
LED P. C. Board
LD102
LD103
84C40338W03-0
Pick-Up Unit (HD101)
YEL ORG
LD101
Magazine LED P. C. Board
RED BLK
To CH7
CH7
S401
84D40892 W03-0
Switch P. C. Board
FPC Elevator P. C. Board
To A
PT101
R1001
R1002
PT102
Sensor P. C. Board
84C40338W01-0
S102
Loading Motor (M101)
RED BRN
PT103
84C40338 W05-0
Magazine Photo P. C. Board
Assy., DIN Connector (8 (ET801)
1 2 3 4 5
A B C D E F G H

Diagram (2/2) All P.C. Boards viewed from soldered side.


Interrupt P. C. Board
S103
P1101
Q1003
B
E
S104
W02-0
CW104
8
1
Elevator Motor
(M102)
To CW104
WHT(7)
WHT(6)
WHT(5)
WHT(4)
WHT(3)
WHT(2)
WHT(1)
GRY
Main P. C. Board
CB102
CB101
CB503
CB502
CB504
CB501
CB505
CB801
Sled Motor
(M103)
①
②
③
④
⑤
⑥
⑦
⑫
※
LD102
LD103
Pick-Up Unit
(HD101)
YEL
ORG
LD101
W06-0
Magazine LED P. C. Board
RED
BLK
To CH7
CH7
S401
W03-0
Switch P. C. Board
P. C. Board
RED
BRN
PT103
W05-0
Magazine Photo P. C. Board
Loading Motor
(M101)
S102
Assy., DIN Connector (8P)
(ET801)
BLK
BLK (GND)
YEL (BATT)
RED (ACC)
BRN
GRN (BUS)
SHLD
RED (Rch)
GRY
WHT (Lch)
SHLD
SHLD
Lug
To CB803
Connector P. C. Board
CB803
CB802
R229
R230
C205
To CB802
WHT(7)
WHT(6)
WHT(5)
WHT(4)
WHT(3)
WHT(2)
WHT(1)
GRY

Orange Color Pattern : Component Side Pattern
Blue Color Pattern : Foil Side Pattern

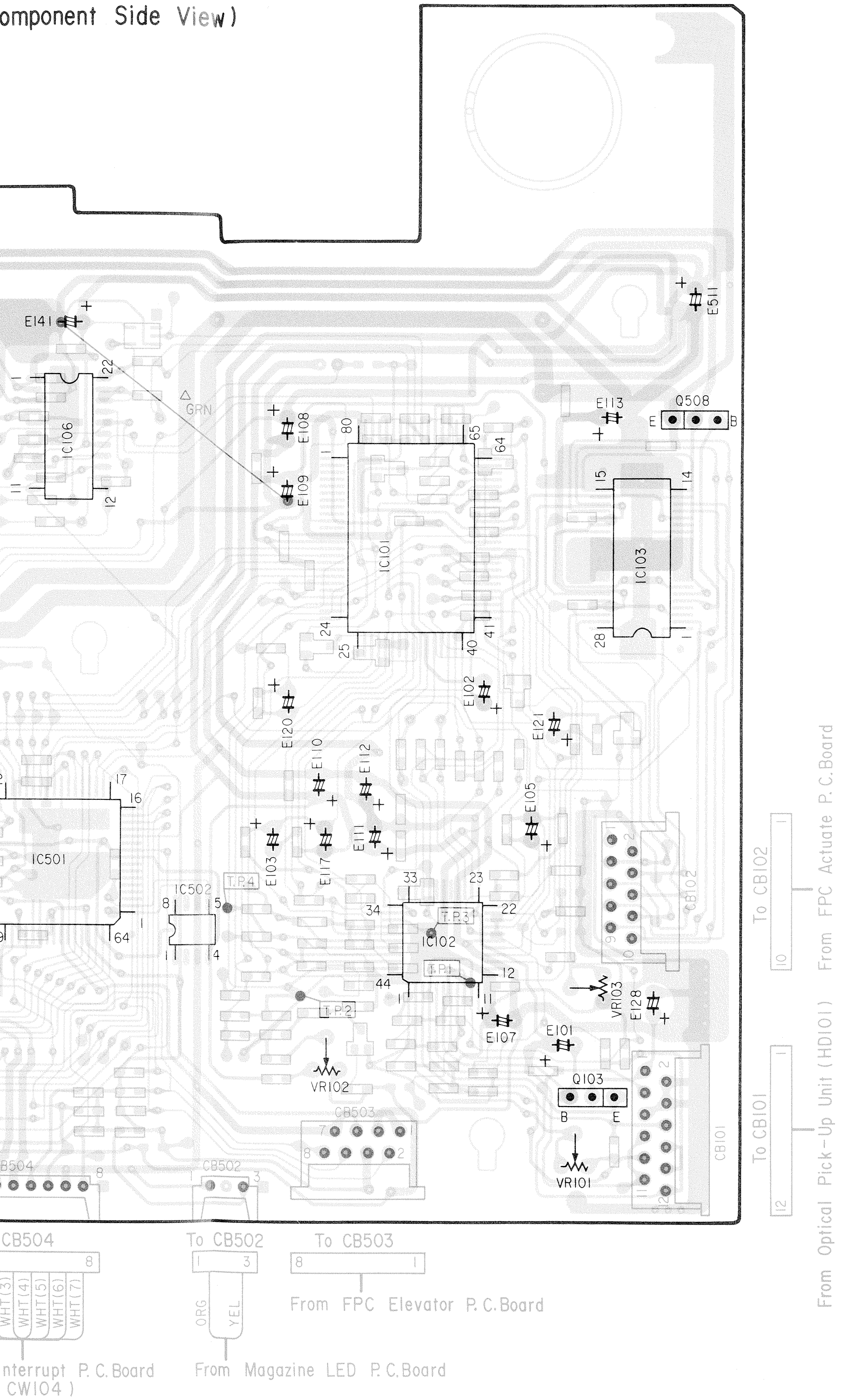
Parts Layout on P.C. Boards and Wiring Diagram (1/2)


Main P.C.Board (Component Side View)
Main P.
1
2
3
4
5
A
B
C
D
E
F
G
H
From Connector P.C.Board (CB802)
GRY
WHT(1)
WHT(2)
WHT(3)
WHT(4)
WHT(5)
WHT(6)
WHT(7)
To CB801
CB801
E801
L801
D801
E216
E215
IC203
E202
E213
E214
E205
E206
E204
IC202
X101
E141
IC106
GRN
E108
E109
IC101
IC103
E113
Q508
E511
ZD501
E504
IC504
E804
Q507
E808
X501
IC501
E510
TH501
Q802
L802
E802
IC801
IC507
IC502
TP4
E103
E117
E111
E120
E110
E112
E105
E102
E121
TP3
TP1
IC102
TP2
VR102
E107
E101
Q103
VR103
E128
VR101
CB102
CB101
CB503
CB505
CB501
CB504
CB502
To CB505
RED
BLK
From Switch P.C.Board (CH7)
To CB501
BRN
RED
From Magazine Photo P.C.Board
To CB504
GRY
WHT(1)
WHT(2)
WHT(3)
WHT(4)
WHT(5)
WHT(6)
WHT(7)
From Interrupt P.C.Board (CW104)
To CB502
ORG
YEL
From Magazine LED P.C.Board
To CB503
From FPC Elevator P.C.Board
To CB102
From FPC Actuate P.C.Board
To CB101
From Optical Pick-Up Unit (HD101)
C502
R515
C110
R117
R116
C107
R118
R115
R113
Q114
C109
R114
Q116
R190
R192
C106
C108
C105
R151
R112
R111
R110
R109
R150
C155
C143
C101
D104
Q112
Q115
R103
R102
Q113
R189
R188
R148
C129
R107
R108
R106
C130
R105
C151
C127
R147
C153
C152
R120
R121
C126
R146
R145
C111
Q102
C113
R122
R123
R167
C114
R126
C115
R124
C116
R128
R127
R144
R140
R125
R129
C117
C150
C122
C118
R130
C124
C123
R186
C142
C119
R185
R137
R139
R134
R141
R180
C121
R138
Q111
R179
C120
R136
C140
R181
R187
R135
VR101

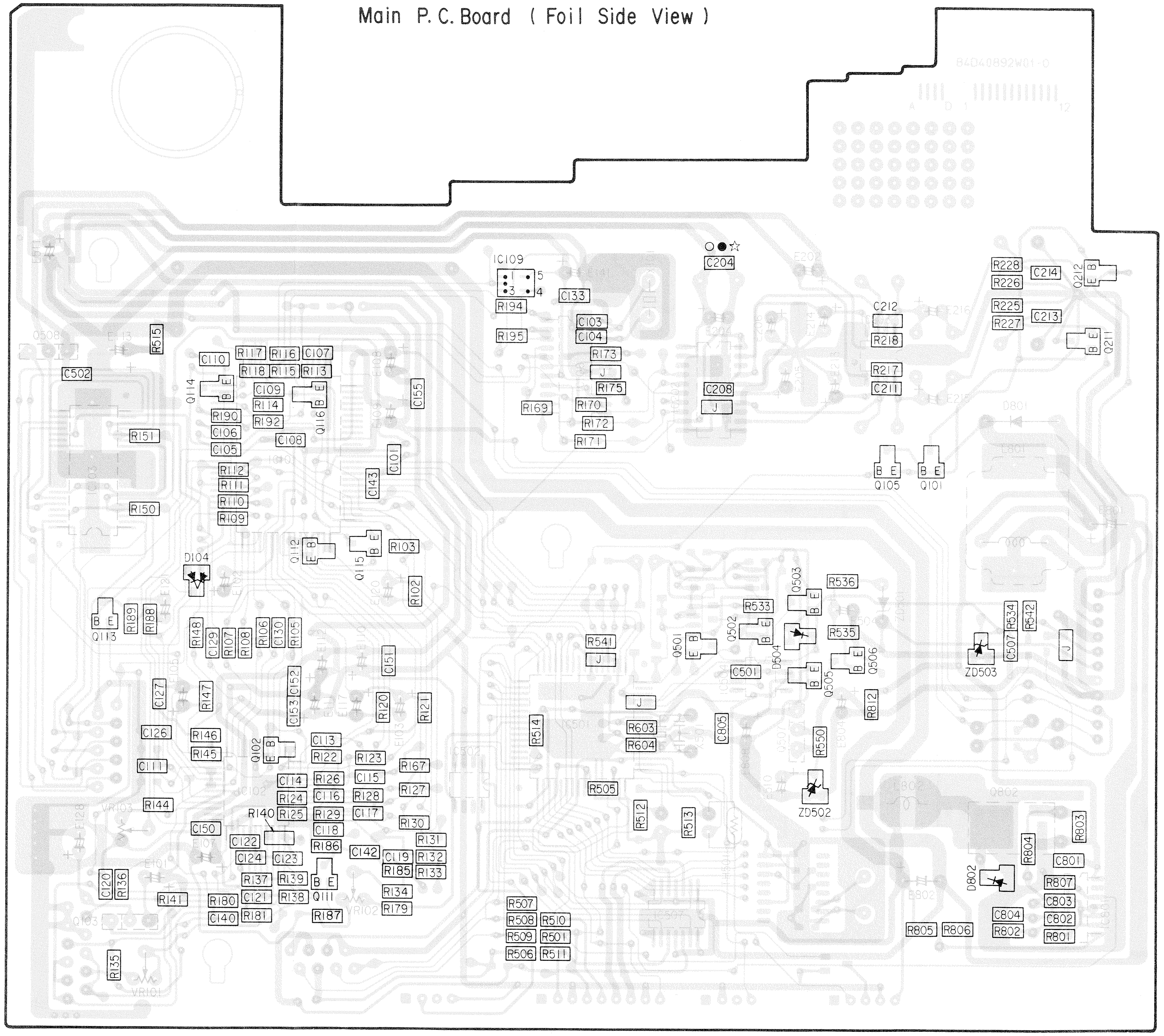
Notes:

Diagram (1/2)

omponent Side View)


IC106
IC101
IC103
IC501
IC502
IC102
Q508
Q103
VR101
VR102
VR103
CB101
CB102
CB503
CB504
CB502
GRN
To CB102
From FPC Actuate P.C.Board
To CB101
From Optical Pick-Up Unit (HD101)
CB504
To CB502
To CB503
WHT(3)
WHT(4)
WHT(5)
WHT(6)
WHT(7)
ORG
YEL
From FPC Elevator P.C.Board
nterrupt P.C.Board
CW104)
From Magazine LED P.C.Board

Main P. C. Board (Foil Side View)


IC109
C204
Q114
Q116
Q112
Q115
Q113
Q102
Q111
D104
Q105
Q101
Q212
Q211
Q501
Q502
Q503
Q504
Q505
Q506
D504
ZD503
ZD502
D802
C502
R515
VR102
VR101

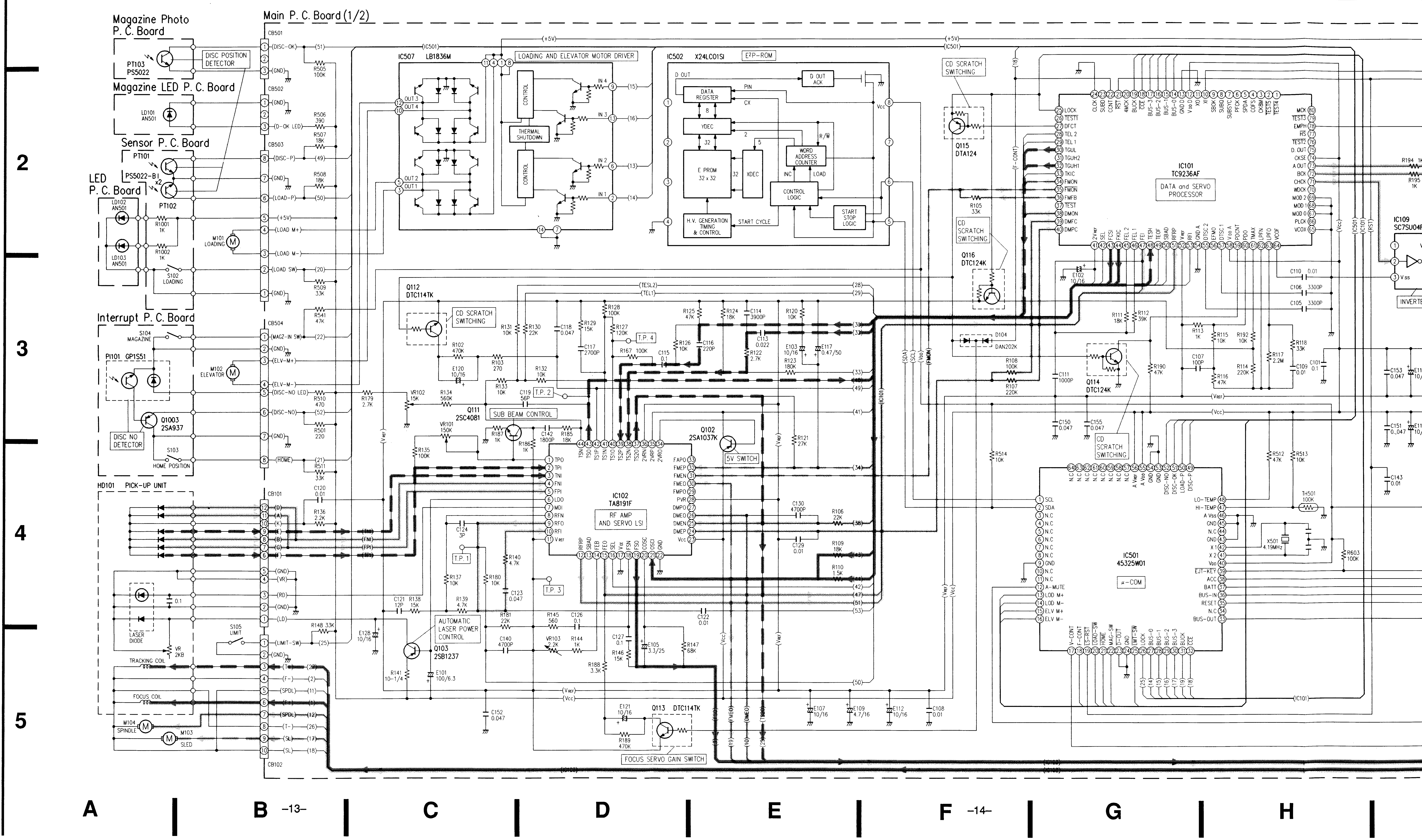
Notes:
○ : For North American Model Only,
● : For Canadian Model Only,
△ : For General Foreign Model Only,
☆ : For Japanese Model Only
Others : Common.

Orange Color Pattern : Component Side Pattern
Blue Color Pattern : Foil Side Pattern

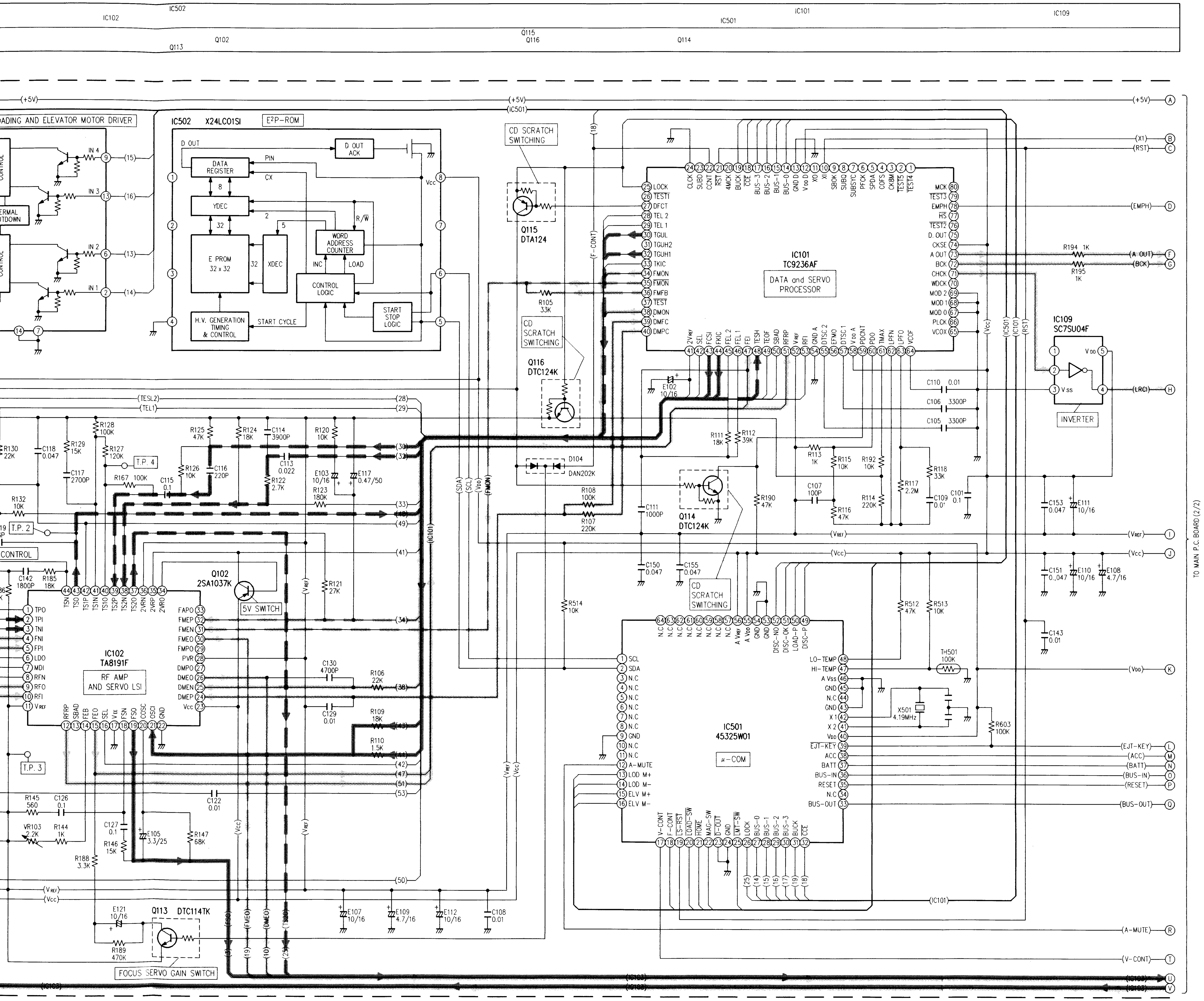
D | E | F | G | H | I | J | K |

Schematic Diagram (1/2)

IC	IC507	IC102	IC502	IC501	IC101	IC109
Transistor (Q, PT, PI)	PT103 PT101 PT102 PI101 Q1003	Q112 Q103 Q111	Q113 Q102	Q115 Q116	Q114	



1
2
3
4
5
A
B
C
D
E
F
G
H
Magazine Photo P. C. Board
PT103 PS5022
DISC POSITION DETECTOR
Magazine LED P. C. Board
LD101 AN501
Sensor P. C. Board
PT101
PS5022-B1 x2
PT102
LED P. C. Board
LD102 AN501
LD103 AN501
R1001 1K
R1002 1K
M101 LOADING
S102 LOADING
Interrupt P. C. Board
S104 MAGAZINE
PI101 GP1S51
M102 ELEVATOR
Q1003 2SA937
DISC NO DETECTOR
S103 HOME POSITION
HD101 PICK-UP UNIT
LASER DIODE
VR 2KB
TRACKING COIL
FOCUS COIL
S105 LIMIT
M104 SPINDLE
M103 SLED
Main P. C. Board (1/2)
CB501
CB502
CB503
CB504
CB101
CB102
IC507 LB1836M
LOADING AND ELEVATOR MOTOR DRIVER
CONTROL
THERMAL SHUTDOWN
IC502 X24LC01SI
E²P-ROM
DATA REGISTER
YDEC
E PROM 32 x 32
XDEC
WORD ADDRESS COUNTER
CONTROL LOGIC
START STOP LOGIC
H.V. GENERATION TIMING & CONTROL
START CYCLE
D OUT ACK
CD SCRATCH SWITCHING
Q115 DTA124
Q116 DTC124K
D104 DAN202K
IC101 TC9236AF
DATA and SERVO PROCESSOR
IC109 SC7SU04F
INVERTER
Q112 DTC114TK
Q111 2SC4081
SUB BEAM CONTROL
IC102 TA8191F
RF AMP AND SERVO LSI
Q102 2SA1037K
5V SWITCH
Q103 2SB1237
AUTOMATIC LASER POWER CONTROL
Q113 DTC114TK
FOCUS SERVO GAIN SWITCH
Q114 DTC124K
IC501 45325W01
μ-COM
X501 4.19MHz
TH501 100K
T.P. 1
T.P. 2
T.P. 3
T.P. 4
(+5V)
(Vref)
(Vcc)


IC502
IC102
IC501
IC101
IC109
Q115
Q116
Q113
Q102
Q114
(+5V)
(IC501)
LOADING AND ELEVATOR MOTOR DRIVER
IC502 X24LC01SI
E²P-ROM
D OUT
D OUT ACK
DATA REGISTER
PIN
CX
YDEC
R/W
E PROM 32 x 32
XDEC
WORD ADDRESS COUNTER
INC
LOAD
CONTROL LOGIC
H.V. GENERATION TIMING & CONTROL
START CYCLE
START STOP LOGIC
THERMAL SHUTDOWN
IN 1
IN 2
IN 3
IN 4
CD SCRATCH SWITCHING
Q115 DTA124
Q116 DTC124K
IC101 TC9236AF
DATA and SERVO PROCESSOR
LOCK
TEST1
DFCT
TEL 2
TEL 1
TGUL
TGUH2
TGUH1
TKIC
FMON
FMFB
TEST
DMON
DMFC
DMPC
MCK
TEST3
EMPH
HS
TEST2
D. OUT
CKSE
A OUT
BCK
CHCK
WDCK
MOD 2
MOD 1
MOD 0
PLCK
VCOX
(X1)
(RST)
(EMPH)
(A OUT)
(BCK)
(LRCI)
R194 1K
R195 1K
IC109 SC7SU04F
INVERTER
R105 33K
D104 DAN202K
R108 100K
R107 220K
E102 10/16
C110 0.01
C106 3300P
C105 3300P
R111 18K
R112 39K
R113 1K
R115 10K
R192 10K
R118 33K
R117 2.2M
C107 100P
R116 47K
R114 220K
C109 0.01
C101 0.1
C153 0.047
E111 10/16
Q114 DTC124K
R190 47K
C111 1000P
C150 0.047
C155 0.047
(VREF)
(Vcc)
C151 0.047
E110 10/16
E108 4.7/16
TO MAIN P.C. BOARD (2/2)
(TESL2)
(TEL1)
R128 100K
R130 22K
C118 0.047
R129 15K
R127 120K
T.P. 4
R125 47K
R124 18K
C114 3900P
R120 10K
R126 10K
C116 220P
C113 0.022
R122 2.7K
E103 10/16
E117 0.47/50
R123 180K
C117 2700P
R167 100K
C115 0.1
R132 10K
T.P. 2
CONTROL
C142 1800P
R185 18K
Q102 2SA1037K
5V SWITCH
R121 27K
IC102 TA8191F
RF AMP AND SERVO LSI
TPO
TPI
TNI
FNI
FPI
LDO
MDI
RFN
RFO
RFI
VREF
FAPO
FMEP
FMEN
FMEO
FMPO
PVR
DMPO
DMEO
DMEN
DMEP
Vcc
C130 4700P
R106 22K
C129 0.01
R109 18K
R110 1.5K
T.P. 3
R145 560
C126 0.1
VR103 2.2K
R144 1K
C127 0.1
E105 3.3/25
R147 68K
R146 15K
R188 3.3K
C122 0.01
E121 10/16
R189 470K
Q113 DTC114TK
FOCUS SERVO GAIN SWITCH
R514 10K
CD SCRATCH SWITCHING
IC501 45325W01
μ-COM
SCL
SDA
N.C
GND
A-MUTE
LOD M+
LOD M-
ELV M+
ELV M-
LO-TEMP
HI-TEMP
A Vss
X 1
X 2
VDD
EJT-KEY
ACC
BATT
BUS-IN
RESET
BUS-OUT
X501 4.19MHz
TH501 100K
R603 100K
R512 47K
R513 10K
C143 0.01
V-CONT
F-CONT
LS-RST
LOAD-SW
HOME
MAG-SW
D-OUT
DMT-SW
LOCK
BUS-0
BUS-1
BUS-2
BUS-3
BUCK
I2C
DISC-NO
DISC-OK
LOAD-P
DISC-P
(EJT-KEY)
(ACC)
(BATT)
(BUS-IN)
(RESET)
(BUS-OUT)
(A-MUTE)
(V-CONT)
(IC101)
(IC103)
E107 10/16
E109 4.7/16
E112 10/16
C108 0.01
(SDA)
(SCL)
(VDD)
(FMON)
(F-CONT)
(FMEO)
(DMEO)
(TESO)

NOTES:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1,000,000}$

IC101

1	N.C	17	PS	33	2.05V	49	2.1V	65	0V
2	N.C	18	PS	34	2.07V	50	2.1V	66	N.C
3	N.C	19	PS	35	2.1V	51	2.2V	67	0V
4	N.C	20	N.C	36	2.1V	52	2.1V	68	0V
5	N.C	21	4.8V	37	N.C	53	2.5V	69	0V
6	N.C	22	0V	38	2.1V	54	0V	70	N.C
7	N.C	23	N.C	39	PS	55	2.53V	71	PS
8	N.C	24	0V	40	PS	56	N.C	72	PS
9	N.C	25	PS	41	4.2V	57	2.53V	73	PS
10	PS	26	N.C	42	5V	58	5V	74	5V
11	N.C	27	PS	43	2.5V	59	PS	75	PS
12	5V	28	2.1V	44	2.5V	60	PS	76	N.C
13	0V	29	2.1V	45	2.1V	61	2.1V	77	N.C
14	PS	30	2.1V	46	2.1V	62	2.1V	78	5V
15	PS	31	N.C	47	2.1V	63	2V	79	N.C
16	PS	32	2.1V	48	2.1V	64	2.2V	80	N.C

IC102

1	1.8V	17	0V	33	N.C
2	2.1V	18	2.1V	34	4.45V
3	2.1V	19	2.2V	35	4.19V
4	2.1V	20	2.15V	36	2.1V
5	2.1V	21	2.52V	37	2.05V
6	3.95V	22	0V	38	2.09V
7	0.18V	23	5.03V	39	2.09V
8	2.1V	24	2.17V	40	2.09V
9	2.45V	25	2.17V	41	2.09V
10	2.1V	26	2.35V	42	2.09V
11	2.1V	27	N.C	43	2.1V
12	2.2V	28	2.1V	44	2.1V
13	N.C	29	N.C		
14	2.08V	30	2.05V		
15	2.11V	31	2.1V		
16	5V	32	2.09V		

IC109

1	N.C
2	PS
3	0V
4	PS
5	5V

IC501

1	4.86V	17	4.81V	33	PS	49	4.99V
2	4.86V	18	0V	34	N.C	50	0.14V
3	N.C	19	4.85V	35	4.86V	51	0.17V
4	N.C	20	0V	36	PS	52	5.03V
5	N.C	21	0V	37	4.88V	53	0V
6	N.C	22	0V	38	4.85V	54	0V
7	N.C	23	0V	39	4.81V	55	5.03V
8	N.C	24	0V	40	4.86V	56	5.03V
9	0V	25	5.02V	41	PS	57	N.C
10	4.82V	26	5V	42	PS	58	N.C
11	N.C	27	PS	43	0V	59	N.C
12	0V	28	PS	44	N.C	60	N.C
13	4.84V	29	PS	45	0V	61	N.C
14	4.84V	30	PS	46	0V	62	N.C
15	4.84V	31	PS	47	4.31V	63	N.C
16	4.84V	32	PS	48	5.01V	64	N.C

IC502

1	N.C
2	N.C
3	N.C
4	0V
5	4.86V
6	4.86V
7	N.C
8	4.85V

IC507

1	7.34V	8	7.34V
2	4.83V	9	4.83V
3	0V	10	0V
4	7.34V	11	7.34V
5	0V	12	0V
6	4.83V	13	4.83V
7	0V	14	0V

	E	C	B
Q102	5.03V	4.2V	4.44V
Q103	4.5V	1.8V	3.95V
Q112	2.1V	2.05V	PS
Q113	2.1V	2.05V	PS
Q114	0V	PS	PS
Q115	PS	0V	PS
Q116	2.09V	2.1V	PS
Q1003	PS	0V	0.2V

[Measuring Conditions]

- ∗ Power Supply Voltage : DC 14.4V
- ∗ Measuring Meter : Digital Multi Volt Meter
- ∗ Measuring Point Reference : Between Ground
- ∗ Measuring Condition : Test Disc Play (A-BEX TCD-782 Track No.2 1kHz)

CD Signal Line (Digital)
Focus Error Signal Line
Tracking Error Signal Line
Spindle Drive Signal Line
Sled Drive Signal Line

Schematic Diagram (2/2)

IC	IC504 IC106 IC202 IC103 IC203 IC801
Transistor (Q)	Q506 Q505 Q507 Q501 Q502 Q503 Q802 Q508 Q211 Q105 Q212 Q101

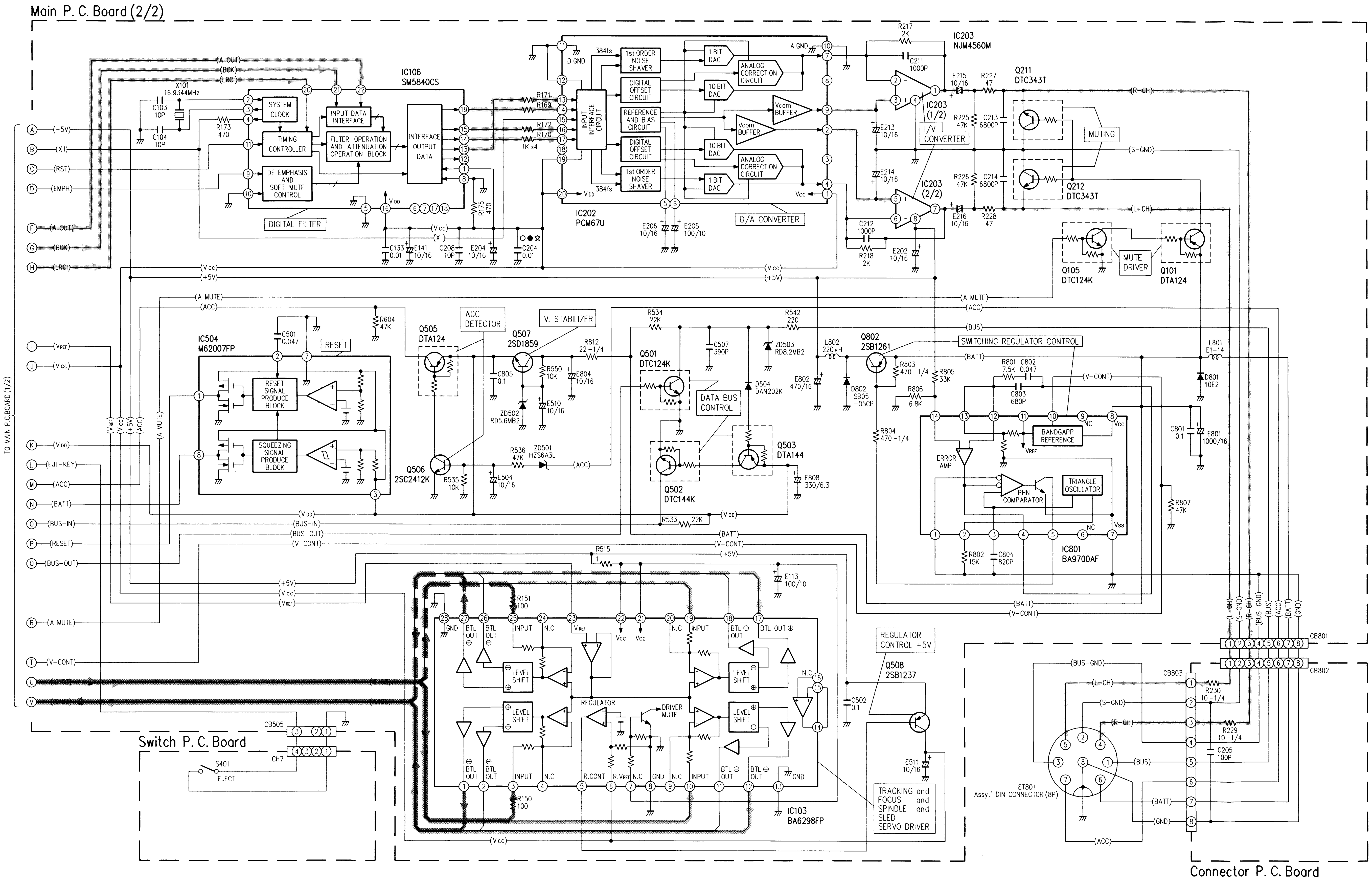
1

2

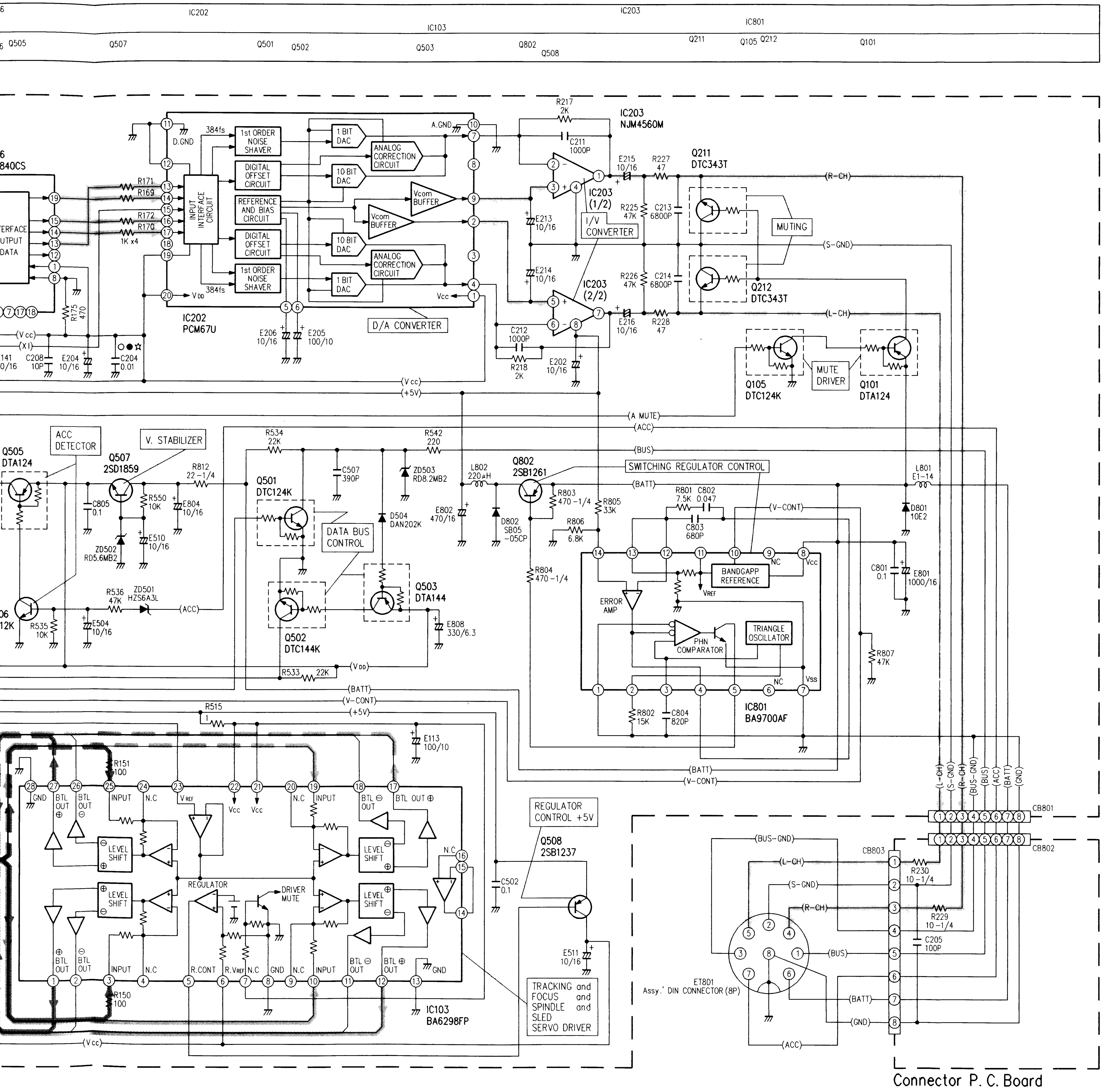
3

4

5


Main P. C. Board (2/2)
IC106
SM5840CS
X101
16.9344MHz
SYSTEM CLOCK
TIMING CONTROLLER
INPUT DATA INTERFACE
FILTER OPERATION AND ATTENUATION OPERATION BLOCK
INTERFACE OUTPUT DATA
DE EMPHASIS AND SOFT MUTE CONTROL
DIGITAL FILTER
IC202
PCM67U
INPUT INTERFACE CIRCUIT
1st ORDER NOISE SHAVER
DIGITAL OFFSET CIRCUIT
REFERENCE AND BIAS CIRCUIT
1 BIT DAC
10 BIT DAC
ANALOG CORRECTION CIRCUIT
Vcom BUFFER
D/A CONVERTER
IC203
NJM4560M
IC203 (1/2)
IC203 (2/2)
I/V CONVERTER
Q211
DTC343T
Q212
DTC343T
MUTING
Q105
DTC124K
Q101
DTA124
MUTE DRIVER
IC504
M62007FP
RESET
RESET SIGNAL PRODUCE BLOCK
SQUEEZING SIGNAL PRODUCE BLOCK
Q505
DTA124
ACC DETECTOR
Q507
2SD1859
V. STABILIZER
Q506
2SC2412K
Q501
DTC124K
DATA BUS CONTROL
Q502
DTC144K
Q503
DTA144
Q802
2SB1261
SWITCHING REGULATOR CONTROL
IC801
BA9700AF
ERROR AMP
BANDGAPP REFERENCE
PHN COMPARATOR
TRIANGLE OSCILLATOR
IC103
BA6298FP
LEVEL SHIFT
REGULATOR
DRIVER MUTE
BTL OUT
INPUT
REGULATOR CONTROL +5V
Q508
2SB1237
TRACKING and FOCUS and SPINDLE and SLED SERVO DRIVER
TO MAIN P.C.BOARD (1/2)
(+5V)
(XI)
(RST)
(EMPH)
(A OUT)
(BCK)
(LRCI)
(VREF)
(Vcc)
(VDD)
(EJT-KEY)
(ACC)
(BATT)
(BUS-IN)
(RESET)
(BUS-OUT)
(A MUTE)
(V-CONT)
(R-CH)
(S-GND)
(L-CH)
(BUS)
Switch P. C. Board
CB505
CH7
S401
EJECT
CB801
CB802
CB803
ET801
Assy.' DIN CONNECTOR (8P)
(BUS-GND)
(GND)
Connector P. C. Board

A B C D E F G H


IC202
IC103
IC203
IC801
Q505
Q507
Q501
Q502
Q503
Q802
Q508
Q211
Q105
Q212
Q101
IC203
NJM4560M
R217 2K
C211 1000P
E215 10/16
R227 47
Q211
DTC343T
(R-CH)
IC203 (1/2)
I/V CONVERTER
R225 47K
C213 6800P
MUTING
(S-GND)
E213 10/16
E214 10/16
R226 47K
C214 6800P
IC203 (2/2)
Q212
DTC343T
(L-CH)
E216 10/16
R228 47
C212 1000P
R218 2K
E202 10/16
Q105
DTC124K
MUTE DRIVER
Q101
DTA124
1st ORDER NOISE SHAVER
DIGITAL OFFSET CIRCUIT
REFERENCE AND BIAS CIRCUIT
1 BIT DAC
10 BIT DAC
ANALOG CORRECTION CIRCUIT
Vcom BUFFER
INPUT INTERFACE CIRCUIT
384fs
D.GND
A.GND
R171
R169
R172
R170
1K x4
INTERFACE OUTPUT DATA
IC202
PCM67U
D/A CONVERTER
E206 10/16
E205 100/10
R175 470
C208 10P
E204 10/16
C204 0.01
(Vcc)
(+5V)
(A MUTE)
(ACC)
(BUS)
(BATT)
(V-CONT)
ACC DETECTOR
V. STABILIZER
Q505
DTA124
Q507
2SD1859
R812 22-1/4
C805 0.1
R550 10K
E804 10/16
E510 10/16
ZD502 RD5.6MB2
R534 22K
R542 220
Q501
DTC124K
C507 390P
ZD503 RD8.2MB2
D504 DAN202K
DATA BUS CONTROL
Q503
DTA144
Q502
DTC144K
E808 330/6.3
R536 47K
ZD501 HZS6A3L
E504 10/16
R535 10K
R533 22K
(VDD)
L802 220μH
E802 470/16
D802 SB05-05CP
Q802
2SB1261
SWITCHING REGULATOR CONTROL
R803 470-1/4
R805 33K
R806 6.8K
R804 470-1/4
R801 7.5K
C802 0.047
C803 680P
ERROR AMP
BANDGAPP REFERENCE
VREF
PHN COMPARATOR
TRIANGLE OSCILLATOR
NC
Vcc
Vss
R802 15K
C804 820P
IC801
BA9700AF
L801 E1-14
D801 10E2
C801 0.1
E801 1000/16
R807 47K
R515 1
E113 100/10
R151 100
GND
BTL OUT ⊕
BTL OUT ⊖
INPUT
N.C
VREF
Vcc
BTL ⊖ OUT
BTL OUT ⊕
LEVEL SHIFT
REGULATOR
DRIVER MUTE
R.CONT
R.VREF
R150 100
IC103
BA6298FP
REGULATOR CONTROL +5V
Q508
2SB1237
C502 0.1
E511 10/16
TRACKING and FOCUS and SPINDLE and SLED SERVO DRIVER
(L-CH) (S-GND) (R-CH) (BUS-GND) (BUS) (ACC) (BATT) (GND)
CB801
CB802
CB803
(BUS-GND)
R230 10-1/4
R229 10-1/4
C205 100P
ET801
Assy.' DIN CONNECTOR (8P)
Connector P. C. Board

IC103

1	3.2V	15	6.88V
2	3.52V	16	N.C
3	2.23V	17	3.45V
4	N.C	18	3.25V
5	6.68V	19	2.05V
6	5.04V	20	N.C
7	7.15V	21	7.12V
8	0V	22	7.12V
9	N.C	23	2.1V
10	2.35V	24	N.C
11	6.69V	25	2.05V
12	3.05V	26	3.3V
13	0V	27	3.4V
14	6.88V	28	0V

IC106

1	5.04V	12	N.C
2	PS	13	PS
3	PS	14	PS
4	PS	15	PS
5	0V	16	5.04V
6	N.C	17	N.C
7	N.C	18	N.C
8	0V	19	PS
9	5.02V	20	PS
10	0V	21	PS
11	4.85V	22	PS

IC202

1	5.04V	11	0V
2	3.4V	12	0V
3	N.C	13	PS
4	3.4V	14	PS
5	3.24V	15	PS
6	4.08V	16	PS
7	3.4V	17	PS
8	N.C	18	N.C
9	3.4V	19	5.04V
10	0V	20	5.04V

IC203

1	4.57V
2	3.4V
3	3.4V
4	0V
5	3.4V
6	3.4V
7	4.58V
8	7.31V

IC504

1	4.86V
2	4.77V
3	4.86V
4	N.C
5	N.C
6	N.C
7	0V
8	4.88V

IC801

1	0V	8	13.1V
2	0.87V	9	N.C
3	1.7V	10	4.82V
4	1.18V	11	N.C
5	PS	12	1.25V
6	N.C	13	1.25V
7	0V	14	1.25V

	E	C	B
Q101	13.02V	0V	12.96V
Q105	0V	12.98V	0V
Q211	0V	0V	0V
Q212	0V	0V	0V
Q501	0V	PS	PS
Q502	0V	PS	PS
Q503	4.9V	PS	PS
Q505	4.86V	4.85V	0V
Q506	0V	0V	0.6V
Q507	4.86V	12.86V	5.46V
Q508	7.31V	5.04V	6.68V
Q802	12.98V	7.54V	12.49V

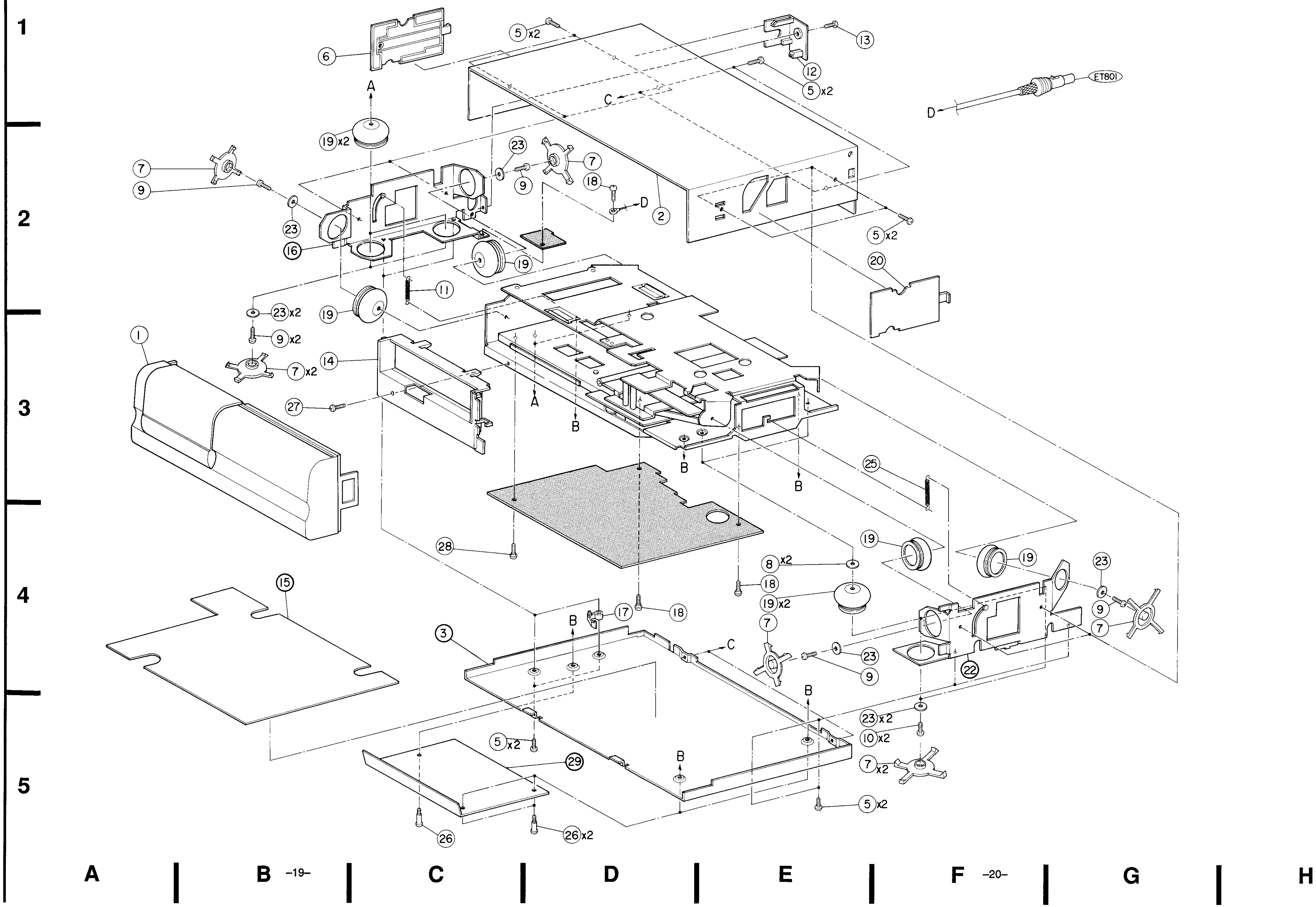
[Measuring Conditions]
* Power Supply Voltage : DC 14.4V
* Measuring Meter : Digital Multi Volt Meter
* Measuring Point Reference : Between Ground
* Measuring Condition : Test Disc Play (A-BEX TCD-782 Track No.2 1kHz)

▨ CD Signal Line (Digital)
┄ L-ch Signal Line
▨ R-ch Signal Line
━ Focus Error Signal Line
━ ━ Tracking Error Signal Line
▨ Spindle Drive Signal Line
▨ ▨ Sled Drive Signal Line

Notes: ○ : For North American Model Only
● : For Canadian Model Only
△ : For General Foreign Model Only
☆ : For Japanese Model Only
Others : Common

NOTES:
1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. P = $\frac{1}{1,000,000}$

Exploded View (Cabinet)


1
2
3
4
5
6
5 x2
13
12
5 x2
ET801
D
C
A
19 x2
7
9
23
16
23
9
7
18
D
2
5 x2
19
11
20
19
23 x2
9 x2
7 x2
14
1
27
A
B
B
B
25
28
8 x2
19
19
23
18
19 x2
9
7
15
18
17
B
3
C
7
23
9
22
B
23 x2
10 x2
5 x2
29
B
7 x2
5 x2
26
26 x2
A
B
C
D
E
F
G
H

Electrical Parts List

Note : The parts is not mentioned, refer to the Service Manual 5957S (68P41921W01).

Symbol No.	Part No.	Description
Main P. C. Board		
IC		
IC501	51T45325W01	45325W01
Transistor		
Q111	48T94582F01	CP., 2SC4081
Capacitors		
C108	08S65128F69	CP., 0.01μF
C142	08S65128F60	CP., 1800pF
○ C204	08S65128F69	CP., 0.01μF
● C204	08S65128F69	CP., 0.01μF
C208	08S65128F12	CP., 10pF
C211	08S65128F57	CP., 1000pF
C212	08S65128F57	CP., 1000pF
C213	08S65128F67	CP., 6800pF
C214	08S65128F67	CP., 6800pF
C502	08S53332F57	CP., 0.1μF
E801	23T00149L29	ELY., 1000μF / 16V
Resistors (All resistors are chip 1/10W ± 5% unless otherwise noted.)		
R173	06S64995F45	470 ohm
R175	06S64995F45	470 ohm
R185	06S64995F85	18K ohm
R186	06S64995F53	1K ohm
R187	06S64995F53	1K ohm
R505	06S64995F02	100K ohm
R515	06T70072F90	1 ohm 1/4W

Notes : ○ : For North American Model Only,
● : For Canadian Model Only,
△ : For General Foreign Model Only,
Others : Common.

Cabinet Assembly Parts List

Note : The parts is not mentioned, refer to the Service Manual 5957S (68P41921W01).

Symbol No.	Index	Part No.	Description
1	3-A	13C31167W10	Assy., Front Escutcheon
12	1-E	15A41470W01	Cover, Connector
14	3-B	64B41609W01	Assy., Plate Inner

Packing Assembly Parts List

Note : The parts is not mentioned, refer to the Service Manual 5957S (68P41921W01).

Symbol No.	Part No.	Description
101	56S41054W14	Carton, Packing (Individual)
102	56D41468W01	Tray, Packing (Top)
103	56D41468W02	Tray, Packing (Bottom)
○ 105	68P40870W66	Owner's Manual
△ 105	68P40870W67	Owner's Manual
● 105	68P40870W66	Owner's Manual

Notes : ○ : For North American Model Only,
● : For Canadian Model Only,
△ : For General Foreign Model Only,
Others : Common.

ALPINE®

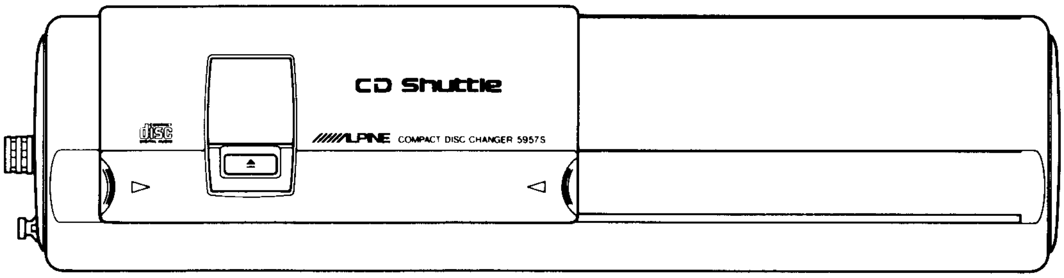
SERVICE MANUAL

Compact Disc Remote Changer

CD Shuttle

COMPACT
disc
DIGITAL AUDIO

- The model described in this manual is developed from Model 5957. For information that is not mentioned in this service manual, refer to the Service Manual 5957 (68P32133W02).
- For the CD deck mechanism parts (DR24A040) of this model, refer to the Service Manual • DR Series (68P30571W03).


CD Shuttle
ALPINE COMPACT DISC CHANGER 5957S

5957S

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Features 4
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Spare Schematic Diagram Inserted.

Operation
Adjustment Procedures
Packing Method View
Disassembly Instructions

Refer to the Service Manual 5957 (68P32133W02).

Specifications

<CD SECTION>

System	Optical (Compact Disc System)
Quantizing Bit Number	20 Bit Linear System
Channels	2 Channels, Stereo
Distortion (997Hz)	0.02%
Frequency Response (Ref. 1kHz)	±2dB (17Hz~19.997kHz)
S/N Ratio	90dB
Channel Separation	80dB (997Hz) 70dB (10.007kHz)
De-Emphasis (Ref. 1kHz)	-20±3dB (4kHz) -20±3dB (16kHz)
Currents Consumption (at PLAY)	1A

<GENERAL>

Power Supply	14V DC (10.5~16V allowable)
Output Voltage/Impedance	850±150mV/10k ohm
Semiconductors	13 IC's, 20 Transistors, 4 Diodes, 3 Zener Diodes
Dimensions (W×H×D)	279×71×178 mm
Weight	2.5kg

<COMPACT DISC>

Maximum Playback Time (at Stereo)	More than 60 minutes
Track Pitch	1.6μm
Modulator Frequency	44.1kHz
Transfer Rate	4.3218 Mbit/sec.
Dimensions	120×1.2 mm

Note : Due to continuing product improvement, specifications and designs are subject to change without notice.

FEATURES

The 5957S incorporates the latest technology with the following unique functions and features:

- **CD Shuttle MOUNTING VERSATILITY**
  The space-saving CD Shuttle can be mounted in a horizontal position, vertical position or one of the other three preset angles between 0° to 90°. This allows the installer to choose from a variety of mounting locations including: the trunk, under or behind the seat, or the glove compartment.

- **EJECT LIGHT**
  Operational performance at night is improved by this function. The indicator turns on and off during EJECT to show the activating condition of this function.

- **8 TIMES OVERSAMPLING DIGITAL FILTER**

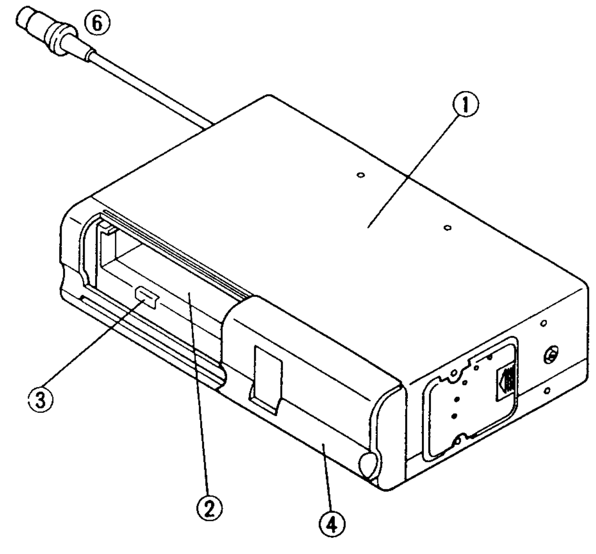
- **HYBRID I-DAC**
  Alpine's 20-bit Hybrid interpolative DAC combines 1-bit D/A conversion technology (for excellent low level linearity) and a multi-bit D/A converter (for best Dynamic Range, Signal-to-Noise Ratio, and lowest distortion and noise characteristics).
  The result is flawless, accurate performance, outstanding resolution and detail along with superb Dynamic Range.

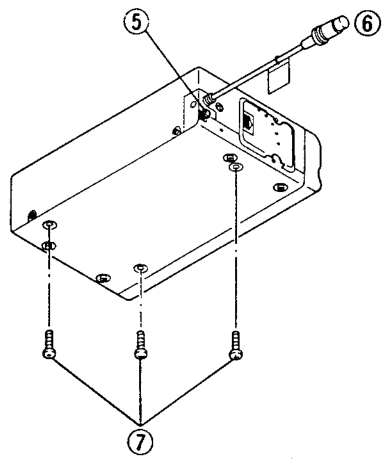
- **MAGAZINE HOUSING 6 CDs**
  Six 5-inch (12 cm) compact discs can be housed in the CD magazine and selected by operating your control unit. You can access any one of the 6 CDs in the magazine quickly and easily for playback of an entire disc or individual selections.

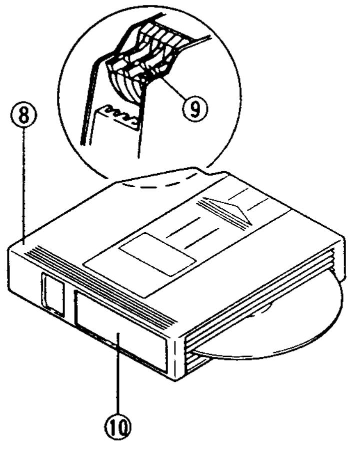
IMPORTANT NOTICE

This compact disc Shuttle has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules. This equipment generates and uses radio frequency energy, and it must be installed and used properly in accordance with the manufacturer's instructions.

PARTS IDENTIFICATION







① **CD Shuttle Unit**

② **CD Magazine Insertion Slot**

③ **Eject Button**
Press this button to eject the CD magazine.

④ **CD Magazine Door**

⑤ **Digital Output Connector**

⑥ **8-pin DIN Connector**

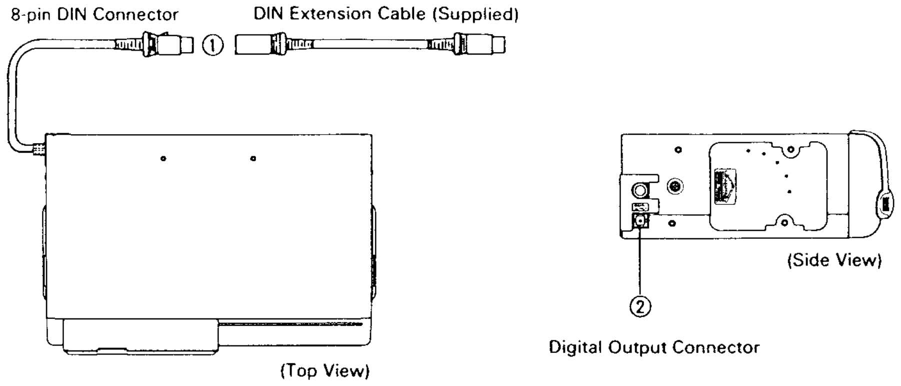
⑦ **Shipping Screws**
Must be removed before operating the unit.

⑧ **CD Magazine**
6 discs can be housed in this case.

⑨ **Disc Lever**

⑩ **Disc Index Labels**
Put the Index Label on the CD Magazine.

CONNECTIONS



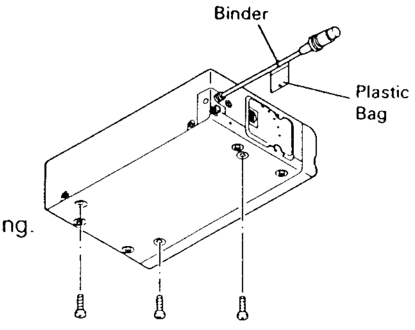
The 5957S CD Shuttle is not equipped with built-in control unit and power amplifier. Consult with your authorized Alpine dealer for connections of your control unit and power amplifier. Refer to the illustration above for connections of the Shuttle.

NOTE:
The 5957S is designed for 12-volt DC negative ground operation so make sure that your vehicle has this system before making electrical connections.

① **8-pin DIN Connector**
Connect this to your control unit or changer control input of your Alpine Shuttle-ready head unit.

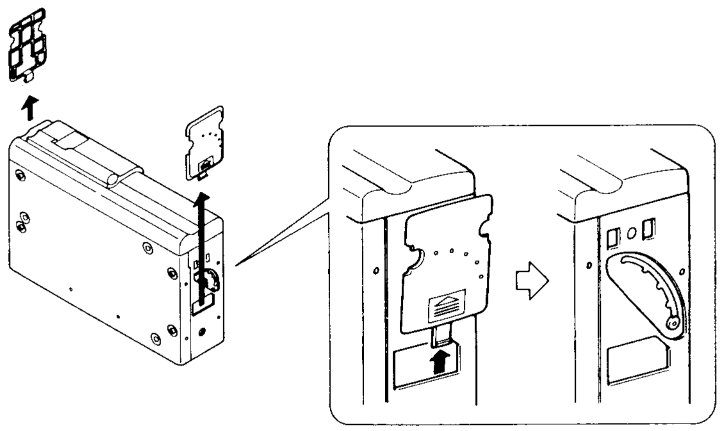
② **Digital Output Connector**
Connect this output to a processor having a corresponding optical digital input using the fiber-optic cable supplied with the processor.

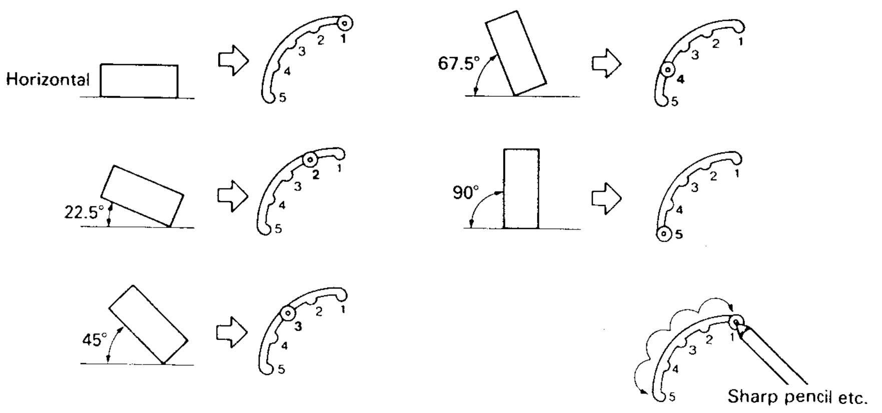
INSTALLATION



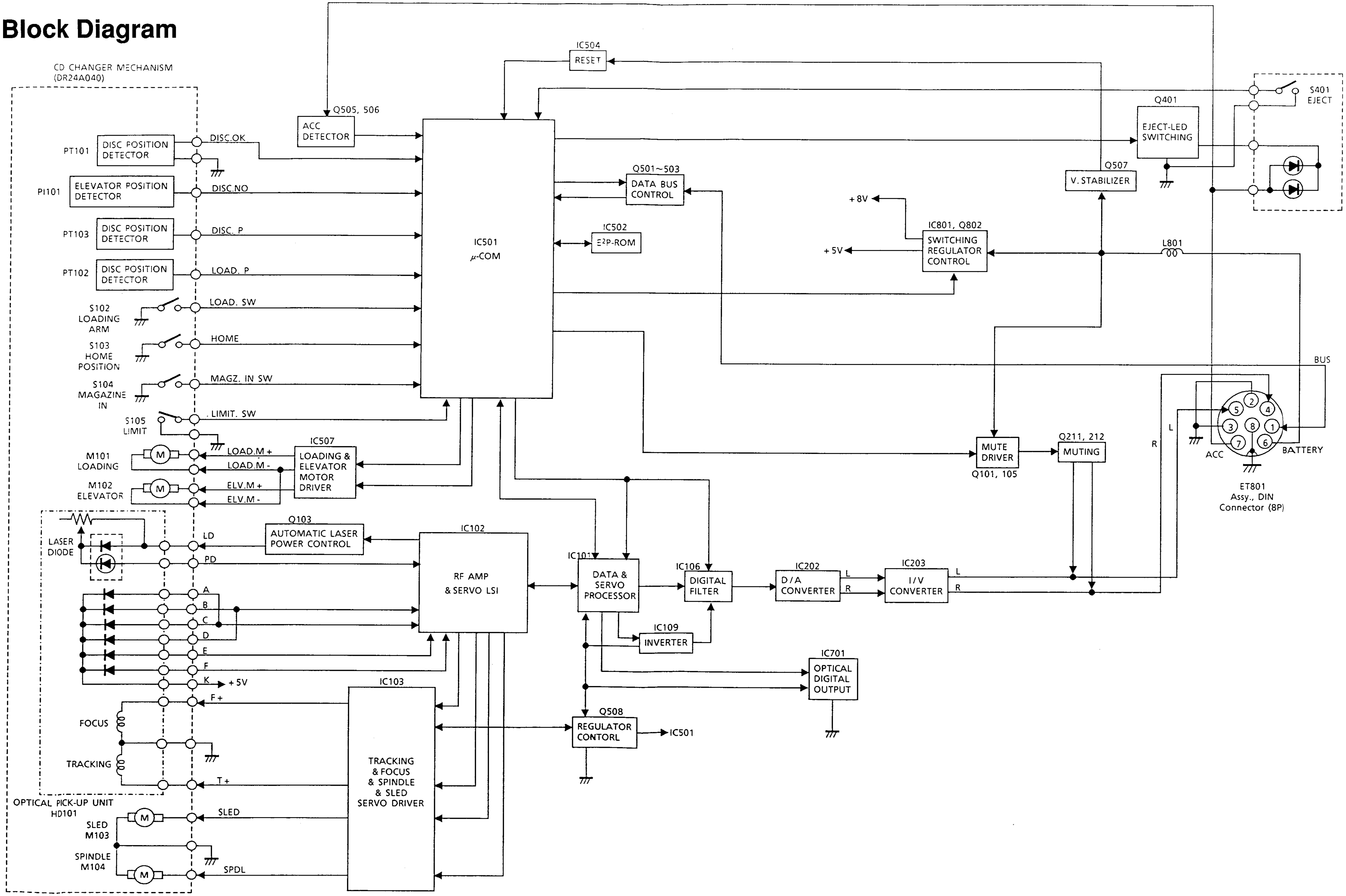
Shipping Screws
Three screws have been attached to the bottom of the Shuttle for protection during shipment. Remove these screws before using. Keep the removed screws in the plastic bag attached to the connector of Shuttle.

Changing of Spring Position
Make sure the mounting angle of the Shuttle installation will fall within the five preset positions (22.5° to 45° from the horizontal or vertical position). The Shuttle is preset at the factory for horizontal mounting. If you wish to install it at any other angle, change the spring configuration as shown.
Slide, in the direction of the arrows, then remove, the left and right side covers. Change the position of the spring with your finger or a pointed object. Use the figure below to determine which spring position would be best suited for your chosen mounting location. If the spring configuration is incorrect or the spring positions on the left and right sides are not the same, the shock absorbing mechanism will not function properly. This will prevent the CD Shuttle from operating at its best.





Block Diagram


CD CHANGER MECHANISM
(DR24A040)
PT101
DISC POSITION DETECTOR
DISC.OK
PI101
ELEVATOR POSITION DETECTOR
DISC.NO
PT103
DISC POSITION DETECTOR
DISC. P
PT102
DISC POSITION DETECTOR
LOAD. P
S102
LOADING ARM
LOAD. SW
S103
HOME POSITION
HOME
S104
MAGAZINE IN
MAGZ. IN SW
S105
LIMIT
LIMIT. SW
M101
LOADING
M
LOAD.M +
LOAD.M -
M102
ELEVATOR
ELV.M +
ELV.M -
IC507
LOADING & ELEVATOR MOTOR DRIVER
Q103
AUTOMATIC LASER POWER CONTROL
LASER DIODE
LD
PD
A
B
C
D
E
F
K
+5V
F+
FOCUS
TRACKING
T+
OPTICAL PICK-UP UNIT
HD101
SLED
M103
SLED
SPINDLE
M104
SPDL
IC102
RF AMP & SERVO LSI
IC103
TRACKING & FOCUS & SPINDLE & SLED SERVO DRIVER
Q505, 506
ACC DETECTOR
IC504
RESET
IC501
μ-COM
Q501~503
DATA BUS CONTROL
IC502
E²P-ROM
IC101
DATA & SERVO PROCESSOR
IC106
DIGITAL FILTER
IC109
INVERTER
IC202
D/A CONVERTER
L
R
IC203
I/V CONVERTER
L
R
IC701
OPTICAL DIGITAL OUTPUT
Q508
REGULATOR CONTORL
IC501
+8V
+5V
IC801, Q802
SWITCHING REGULATOR CONTROL
L801
Q507
V. STABILIZER
Q401
EJECT-LED SWITCHING
S401
EJECT
BUS
MUTE DRIVER
Q101, 105
Q211, 212
MUTING
R
L
ACC
BATTERY
1
2
3
4
5
6
7
8
ET801
Assy., DIN
Connector (8P)

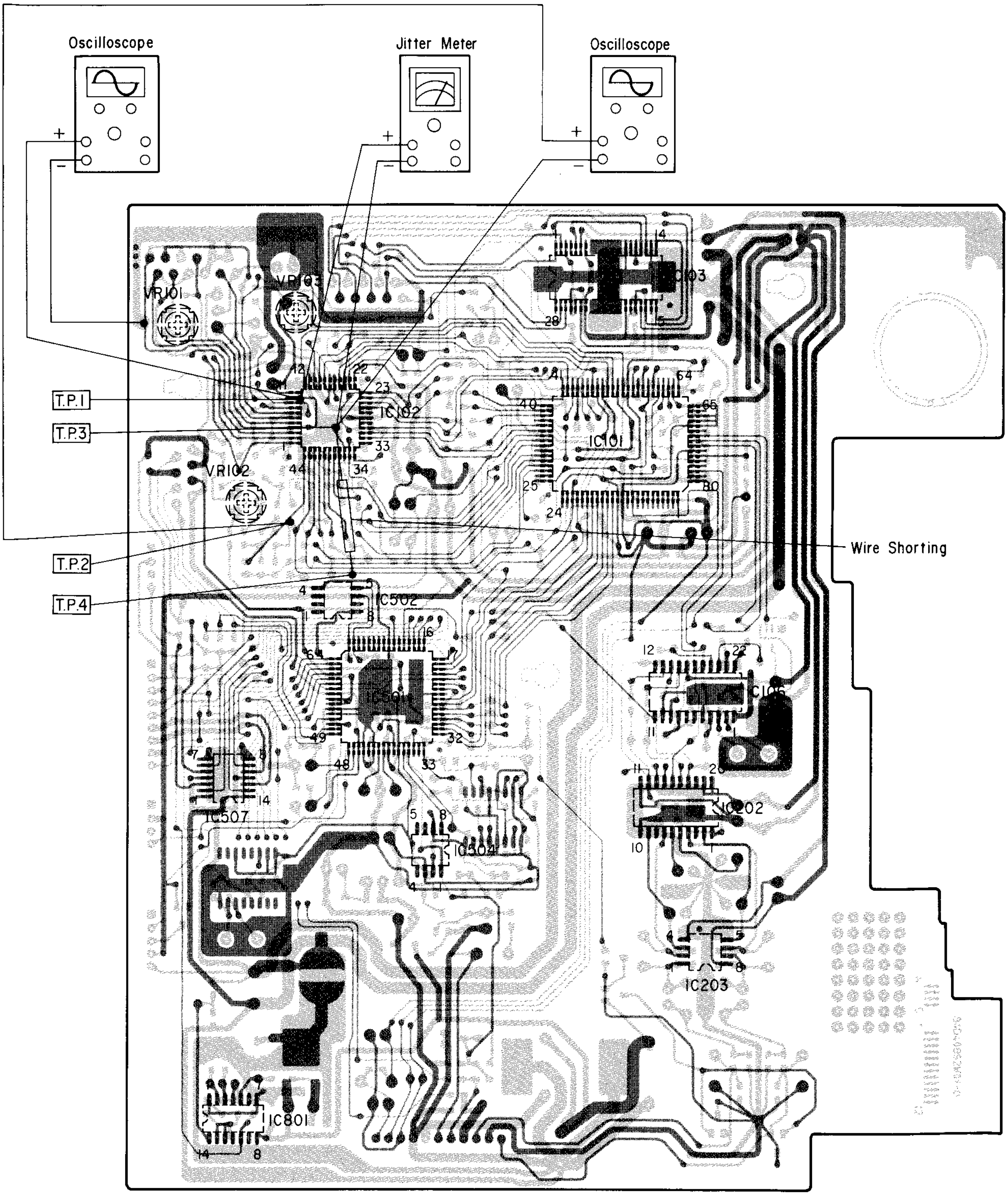
Description of IC Terminals

45552W02 (IC501)

No.	Symbol	I/O	Terminal Description
1	SCL	I	Data read clock input signal line.
2	SDA	I/O	Data reading and writing, Data input and output signal line.
3~8	NC	—	N.C.
9	GND	—	GND
10	EJT-LED	O	Lighting output signal terminal. (at PLAY, at PAUSE and at EJECT)
11	NC	—	N.C.
12	A-MUTE	O	Audio mute output signal terminal.
13	LOD M+	O	Output to move loading motor to direction for pulling in a disc.
14	LOD M-	O	Output to move loading motor to returning a disc to magazine.
15	ELV M+	O	Output signal to move up elevator.
16	ELV M-	O	Output signal to move down elevator.
17	V-CONT	O	Power supply and main power supply ON/OFF output terminal.
18	F-CONT	O	Focus gain control output.
19	$\overline{\text{LS-RST}}$	O	Circumference LSI reset signal.
20	$\overline{\text{LOAD-SW}}$	I	Loading arm operation check switch input signal.
21	$\overline{\text{HOME}}$	I	Elevator home position detection switch input signal.
22	MAG-SW	I	Magazine detection switch input terminal.
23	$\overline{\text{D-OUT}}$	O	Changer controller data output terminal.
24	GND	—	GND
25	$\overline{\text{LMT-SW}}$	I	Sled motor inner circle limit switch input terminal.
26	LOCK	I	TC9236AF (IC101) lock signal input.
27	BUS 0	I/O	Command and data communication bus line.
28	BUS 1		
29	BUS 2		
30	BUS 3		
31	BUCK	O	TC9236AF (IC101) data communication clock output terminal.
32	$\overline{\text{CCE}}$	O	TC9236AF (IC101) chip enable signal output terminal.
33	BUS-OUT	O	Bus data output.
34	NC	—	N.C.
35	RESET	I	Reset signal input terminal.
36	BUS-IN	I	Bus data input.

No.	Symbol	I/O	Terminal Description
37	BATT	I	Battery detect.
38	ACC	I	ACC ON/OFF input signal.
39	$\overline{\text{EJT-KEY}}$	I	MAGAZINE EJECT key input signal.
40	V_{DD}	—	Regulator +5V Terminal.
41	X1	—	Ceramic lock connection terminal for system clock 1. (4.19MHz)
42	X2	—	Ceramic lock connection terminal for system clock 1. (4.19MHz)
43	GND	—	GND
44	NC	—	N.C.
45	GND	—	GND
46	AV_{SS}	—	GND
47	HI-TEMP	I	High temparature detect. (Sensor)
48	LO-TEMP	I	Low temparature detect. (Sensor)
49	DISC-P	I	Disc detect photo sensor.
50	LOAD-P	I	Loading and photo sensor.
51	DISC-OK	I	Disc receive confirm photo sensor.
52	DISC-NO	I	Disc number detect photo sensor.
53	GND	—	GND
54	GND	—	GND
55	$A \cdot V_{DD}$	—	Power supply terminal.
56	$A \cdot V_{REF}$	—	Reference voltage input for D/A converter.
57~64	NC	—	N.C.

Adjustment Locations

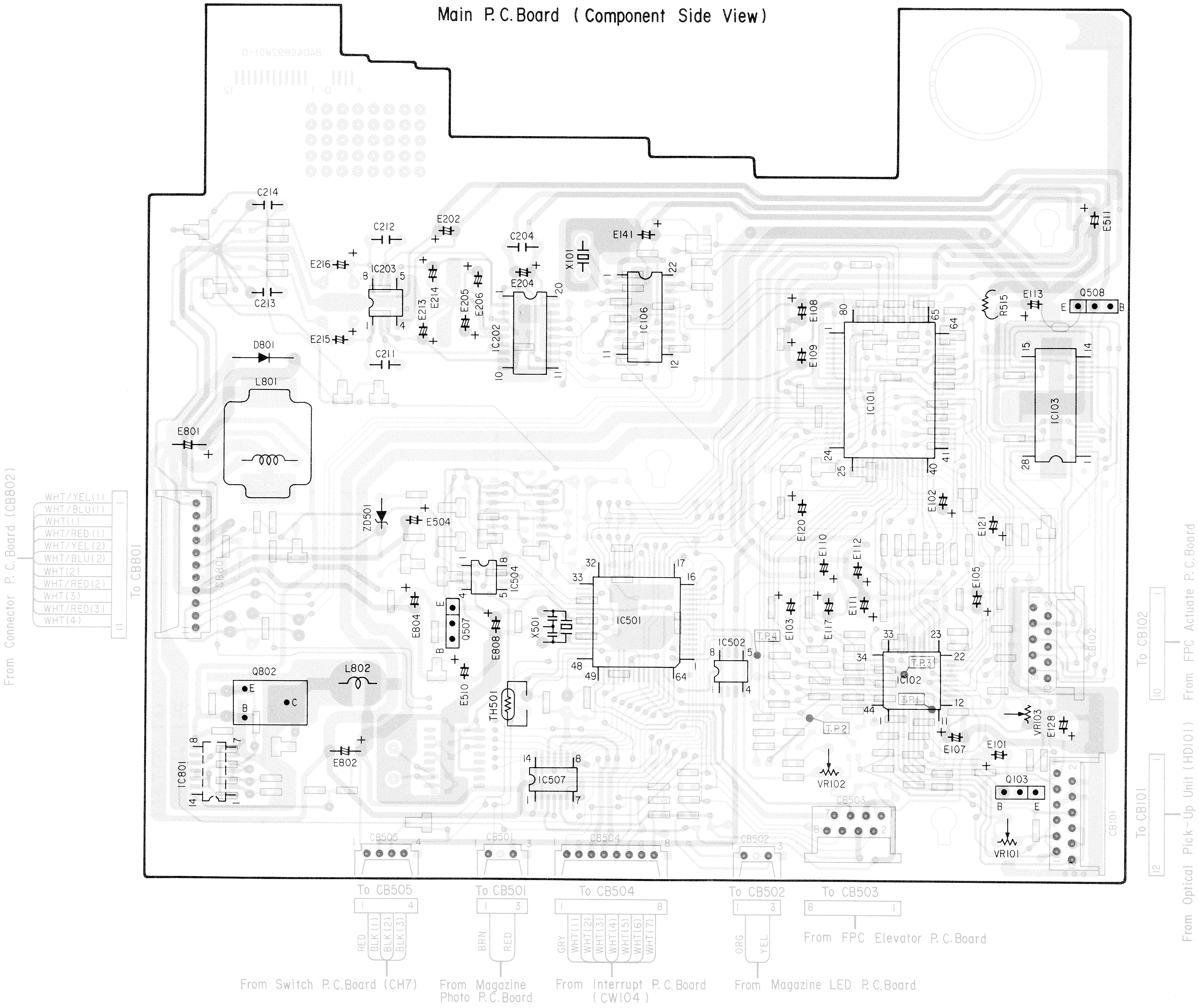

Oscilloscope
Jitter Meter
Oscilloscope
+
−
VR101
VR103
VR102
T.P.1
T.P.3
T.P.2
T.P.4
IC102
IC101
IC103
IC502
IC501
IC507
IC504
IC801
IC106
IC202
IC203
Wire Shorting

Main P.C. Board (Foil Side)

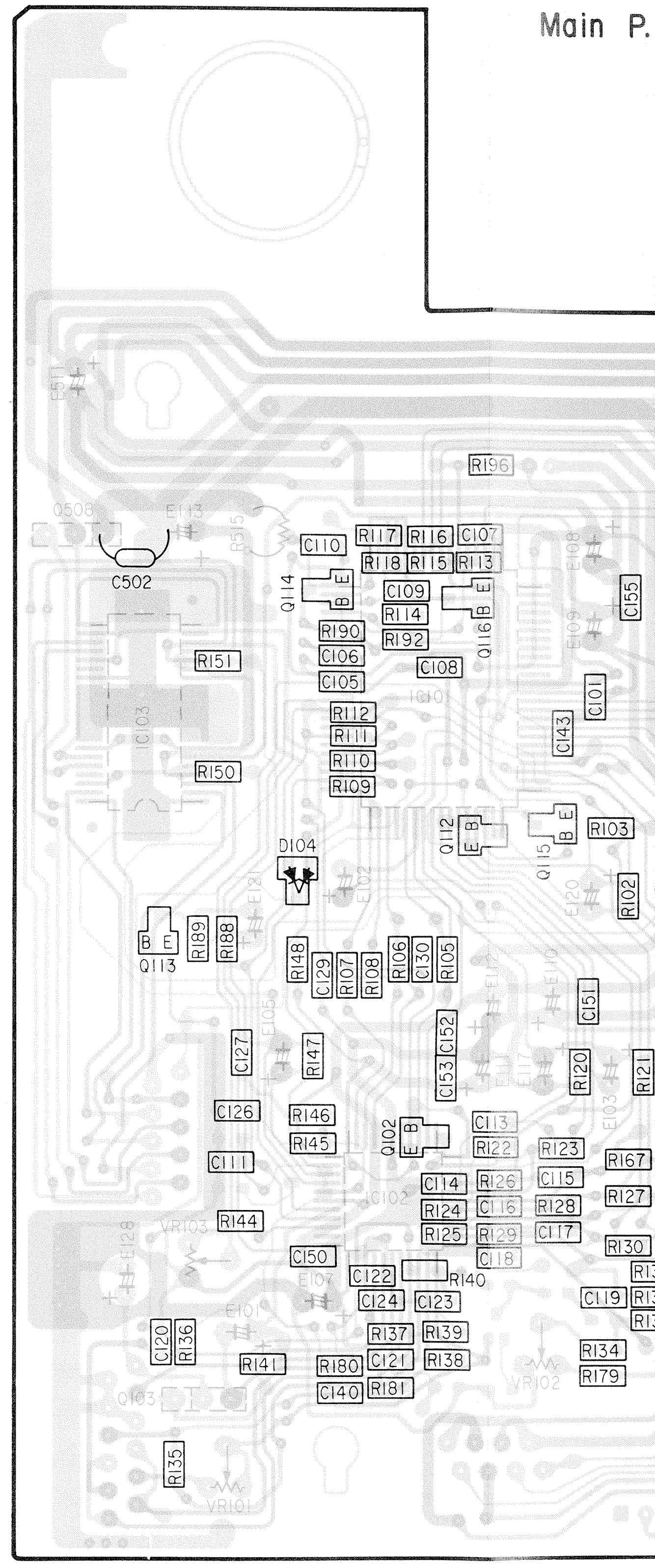
MEMO

Parts Layout on P.C. Boards and Wiring Diagram (1/2)

1
2
3
4
5



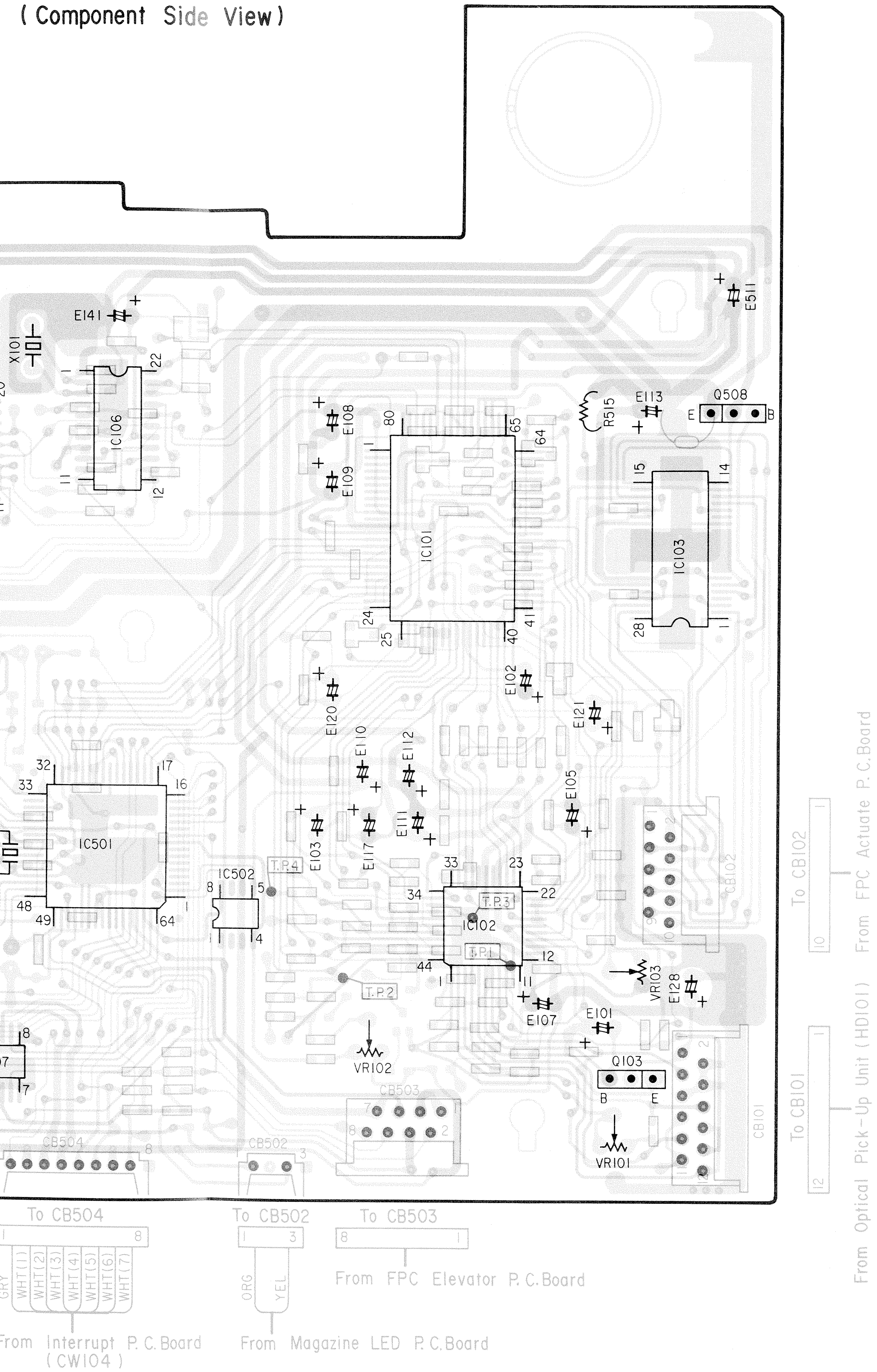
Main P.C.Board (Component Side View)
C214
C213
C212
E202
C204
X101
E141
E511
E216
IC203
B
5
1
4
E215
C211
E213
E214
E205
E206
E204
IC202
20
10
11
IC106
22
11
12
E108
E109
80
65
64
1
IC101
24
25
40
41
R515
E113
Q508
E
B
15
14
IC103
28
D801
L801
E801
ZD501
E504
IC504
E804
E
Q507
B
E808
X501
32
17
33
16
IC501
48
49
64
IC502
8
5
1
4
E120
E110
E112
E103
E117
E111
E102
E121
E105
33
23
34
22
IC102
TP3
TP1
TP2
TP4
44
12
11
E107
E101
VR103
E128
VR102
Q103
B
E
VR101
CB102
CB101
CB801
Q802
E
B
C
L802
E510
TH501
E802
IC801
8
14
7
IC507
14
8
1
7
CB505
CB501
CB504
CB503
CB502
WHT/YEL(1)
WHT/BLU(1)
WHT(1)
WHT/RED(1)
WHT/YEL(2)
WHT/BLU(2)
WHT(2)
WHT/RED(2)
WHT(3)
WHT/RED(3)
WHT(4)
To CB801
From Connector P.C.Board (CB802)
To CB102
From FPC Actuate P.C.Board
To CB101
From Optical Pick-Up Unit (HD101)
To CB505
RED
BLK(1)
BLK(2)
BLK(3)
From Switch P.C.Board (CH7)
To CB501
BRN
RED
From Magazine Photo P.C.Board
To CB504
GRY
WHT(1)
WHT(2)
WHT(3)
WHT(4)
WHT(5)
WHT(6)
WHT(7)
From Interrupt P.C.Board (CW104)
To CB502
ORG
YEL
From Magazine LED P.C.Board
To CB503
From FPC Elevator P.C.Board



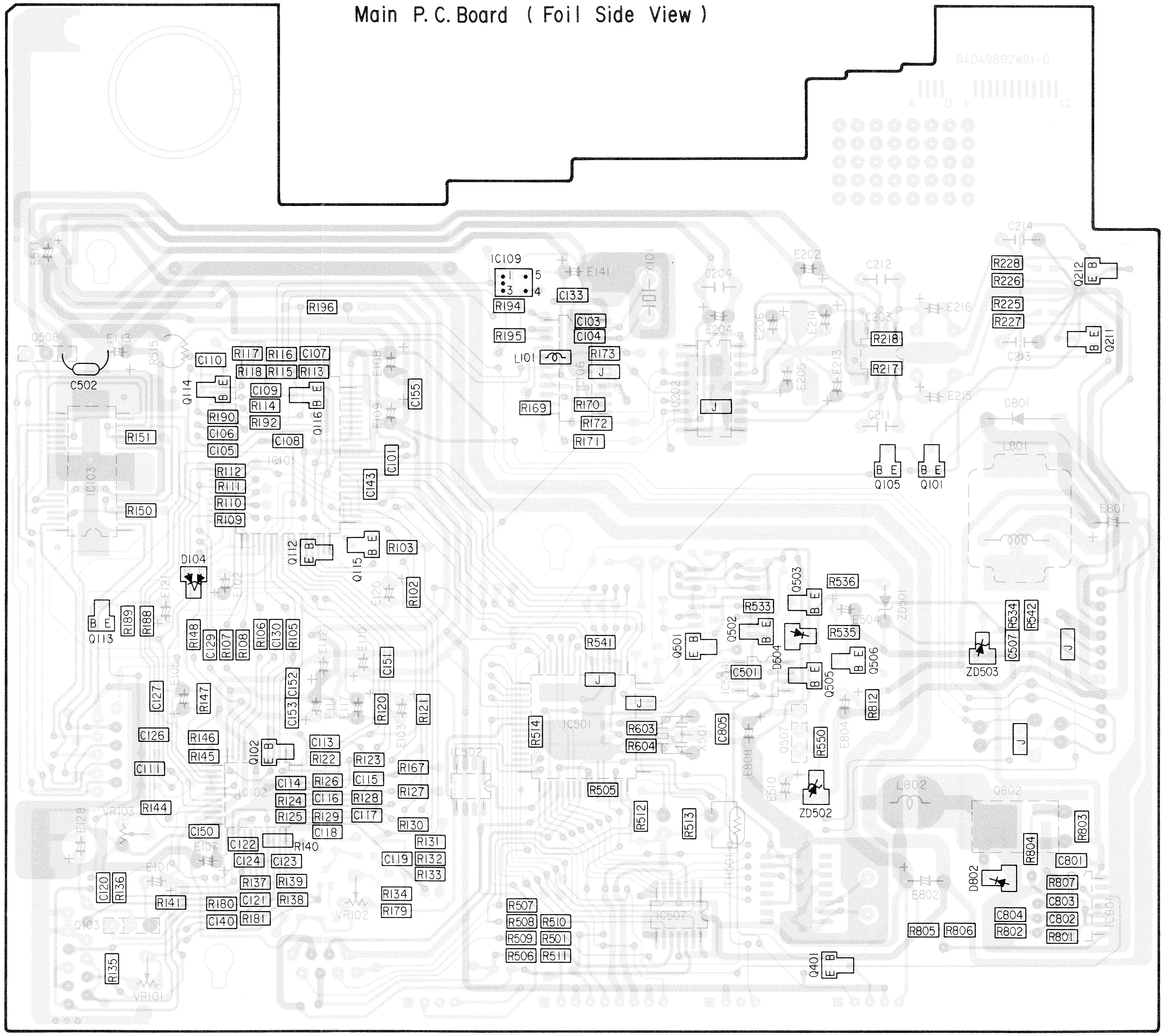
Main P.
C502
Q114
C110
R117
R116
C107
R118
R115
R113
C109
R114
R190
R192
C106
C105
C108
Q116
R196
C155
R151
C101
C143
R112
R111
R110
R109
R150
D104
Q112
Q115
R103
R102
Q113
R189
R188
R148
C129
R107
R108
R106
C130
R105
C151
C127
R147
C152
C153
R120
R121
C126
R146
R145
Q102
C113
R122
R123
R167
C111
C114
R126
C115
R127
R144
R124
C116
R128
R125
R129
C117
C150
C122
R140
C118
R130
C124
C123
C119
C120
R136
R137
R139
R134
R141
R180
C121
R138
R179
C140
R181
R135

Diagram (1/2)

(Component Side View)

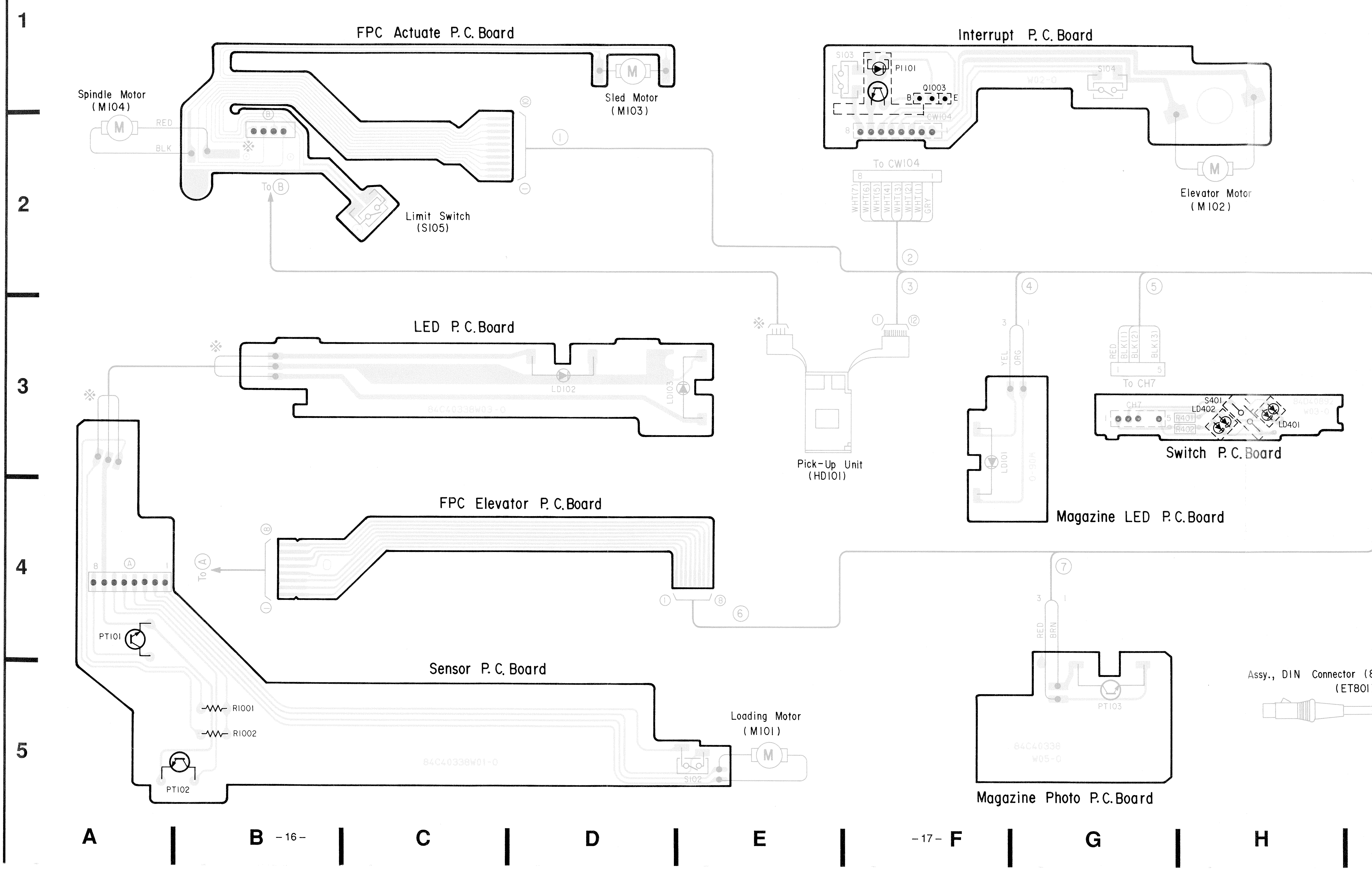

E141
X101
IC106
22
11
12
80
65
64
IC101
24
25
40
41
E108
E109
R515
E113
Q508
E
B
15
14
IC103
28
E511
E120
E102
E121
E110
E112
E105
E103
E117
E111
32
17
33
16
IC501
48
49
64
IC502
8
5
4
T.P.4
33
23
34
22
IC102
T.P.3
T.P.1
44
12
T.P.2
VR102
VR103
E128
E107
E101
Q103
B
E
VR101
CB504
CB502
CB503
CB102
CB101
To CB102
From FPC Actuate P.C.Board
To CB101
From Optical Pick-Up Unit (HD101)
To CB504
To CB502
To CB503
From FPC Elevator P.C.Board
GRY
WHT(1)
WHT(2)
WHT(3)
WHT(4)
WHT(5)
WHT(6)
WHT(7)
ORG
YEL
From Interrupt P.C.Board (CW104)
From Magazine LED P.C.Board

Main P.C. Board (Foil Side View)


IC109
R194
R195
C133
C103
C104
L101
R173
J
R169
R170
R172
R171
R196
C502
C110
R117
R116
C107
R118
R115
R113
Q114
C109
R114
R192
R190
C106
C105
Q116
C108
C155
R151
C101
C143
R112
R111
R110
R109
R150
Q112
Q115
R103
D104
R102
Q113
R189
R188
R148
C129
R107
R108
R106
C130
R105
C151
C127
R147
C152
C153
R120
R121
C126
R146
R145
Q102
C113
R122
R123
C111
C114
R126
C115
R167
R124
C116
R128
R127
R144
R125
R129
C117
C150
C118
R130
C122
R140
R131
C124
C123
C119
R132
R133
C120
R136
R137
R139
R141
R180
C121
R138
R134
R179
C140
R181
R135
R218
R217
R228
R226
R225
R227
Q212
Q211
Q105
Q101
B E
R536
R533
Q503
R535
Q502
D504
Q506
Q505
Q501
R541
J
C501
R812
R534
C507
R542
ZD503
R514
R603
R604
C805
R550
R505
ZD502
R512
R513
R507
R508
R510
R509
R501
R506
R511
Q401
R803
R804
C801
R807
C803
C802
C804
R802
R801
D802
R805
R806

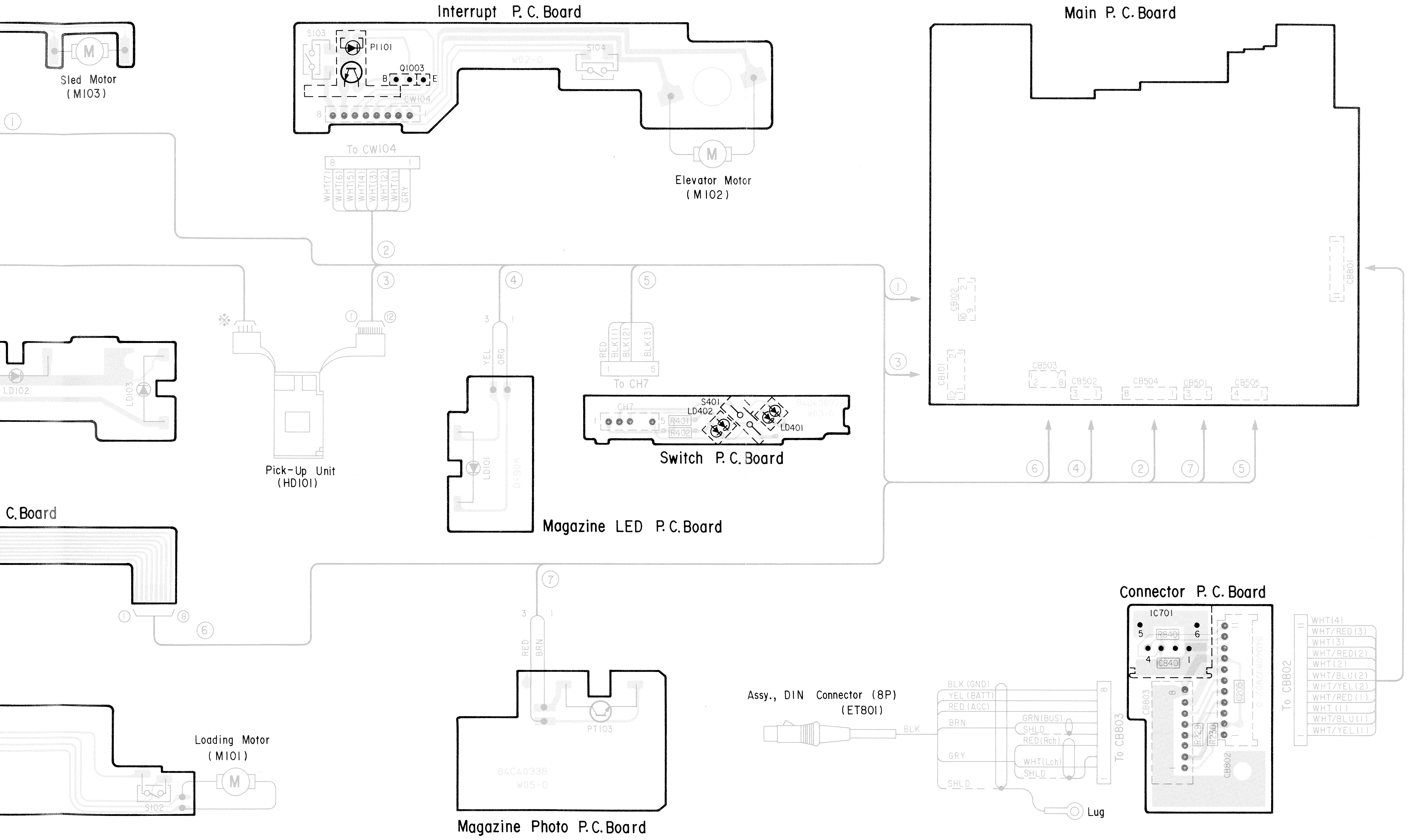
Orange Color Pattern : Component Side Pattern
Blue Color Pattern : Foil Side Pattern

Parts Layout on P.C. Boards and Wiring Diagram (2/2) All P.C.Board viewed from soldered side.


1
2
3
4
5
FPC Actuate P.C. Board
Spindle Motor
(M104)
RED
BLK
M
Sled Motor
(M103)
Limit Switch
(S105)
To B
Interrupt P.C. Board
S103
PI101
Q1003
B C E
S104
W02-0
CW104
8
1
To CW104
WHT(7)
WHT(6)
WHT(5)
WHT(4)
WHT(3)
WHT(2)
WHT(1)
GRY
Elevator Motor
(M102)
②
③
④
⑤
LED P.C.Board
LD102
LD103
84C40338W03-0
Pick-Up Unit
(HD101)
① ⑫
3 1
YEL
ORG
LD101
Magazine LED P.C.Board
RED
BLK(1)
BLK(2)
BLK(3)
To CH7
CH7
S401
LD402
LD401
R401
R402
Switch P.C. Board
FPC Elevator P.C.Board
To A
⑧
⑥
⑦
Sensor P.C. Board
A
PT101
R1001
R1002
PT102
S102
84C40338W01-0
Loading Motor
(M101)
RED
BRN
PT103
84C40338
W05-0
Magazine Photo P.C.Board
Assy., DIN Connector
(ET801
A
B
C
D
E
F
G
H

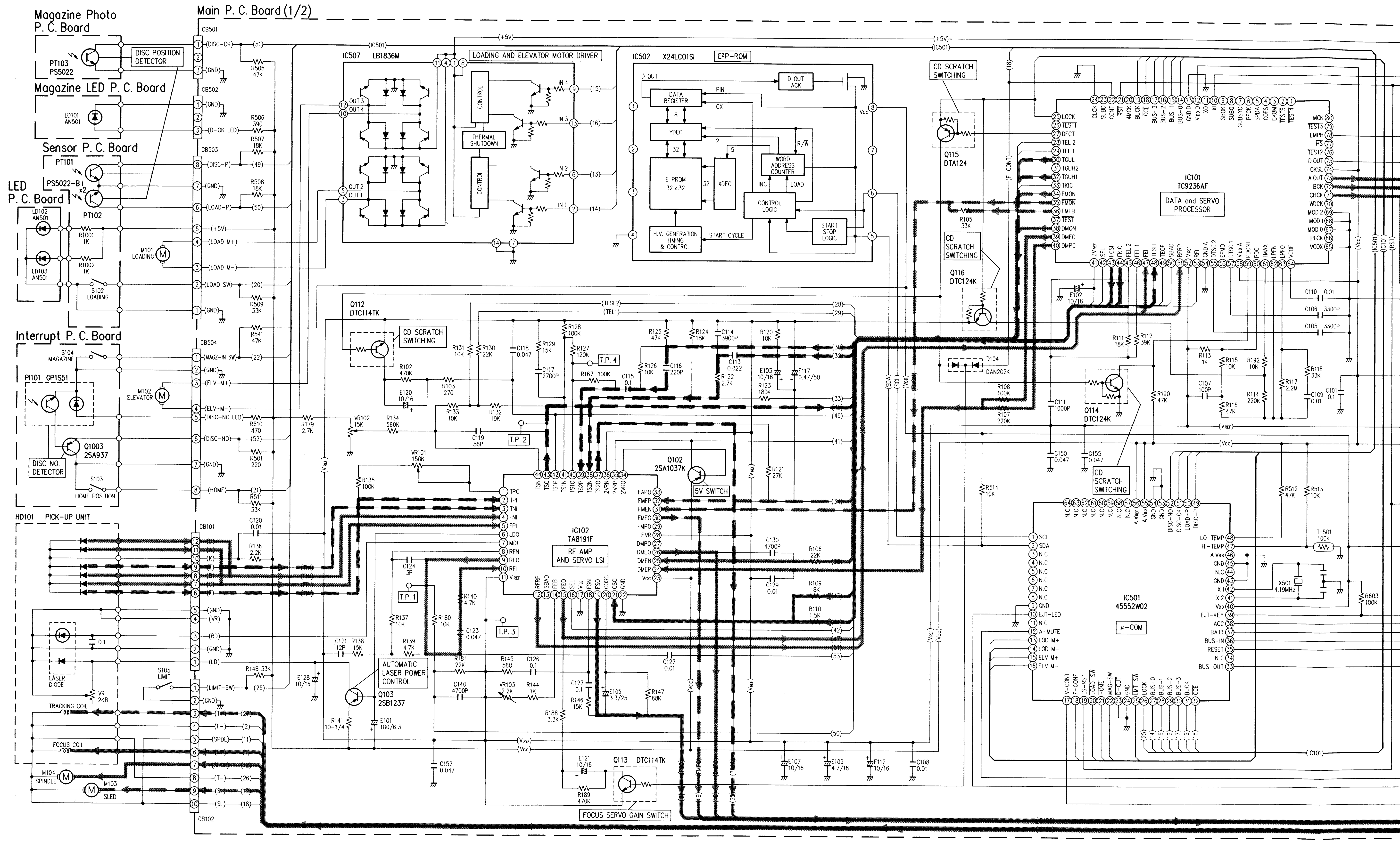
agram (2/2) All P.C.Board viewed from soldered side.

Orange Color Pattern : Component Side Pattern
Blue Color Pattern : Foil Side Pattern

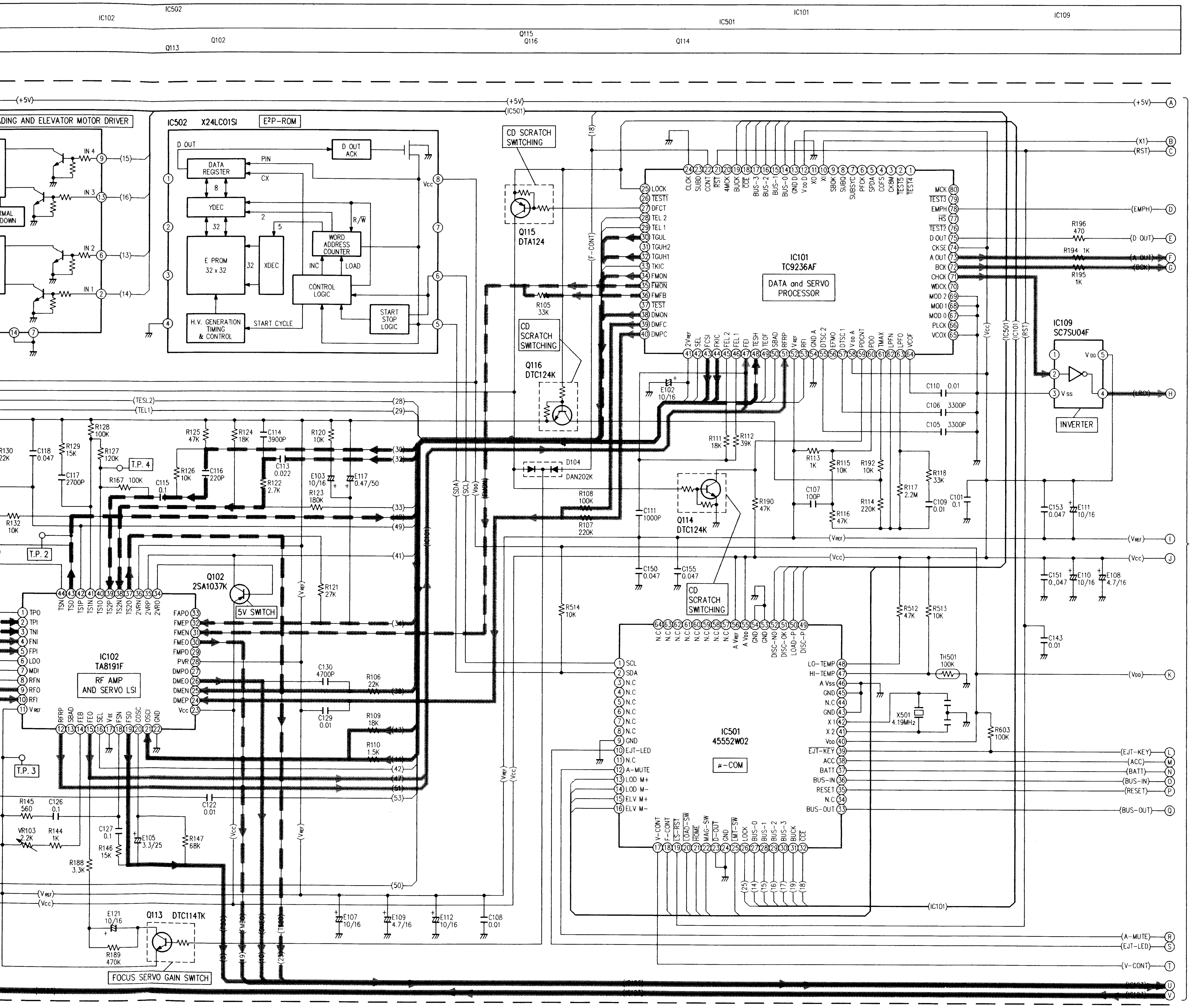

Interrupt P. C. Board
S103
PI101
Q1003
B
E
S104
CW104
8
Sled Motor
(M103)
Elevator Motor
(M102)
To CW104
WHT(7)
WHT(6)
WHT(5)
WHT(4)
WHT(3)
WHT(2)
WHT(1)
GRY
Main P. C. Board
CB801
CB102
CB101
CB503
CB502
CB504
CB501
CB505
LD102
LD103
Pick-Up Unit
(HD101)
YEL
ORG
LD101
Magazine LED P.C.Board
RED
BLK(1)
BLK(2)
BLK(3)
To CH7
CH7
S401
LD402
R401
R402
LD401
Switch P.C.Board
C.Board
Connector P. C. Board
IC701
R840
C840
CB803
CB802
R229
R230
C205
To CB802
WHT(4)
WHT/RED(3)
WHT(3)
WHT/RED(2)
WHT(2)
WHT/BLU(2)
WHT/YEL(2)
WHT/RED(1)
WHT(1)
WHT/BLU(1)
WHT/YEL(1)
Assy., DIN Connector (8P)
(ET801)
BLK
BLK(GND)
YEL(BATT)
RED(ACC)
BRN
GRN(BUS)
SHLD
RED(Rch)
GRY
WHT(Lch)
SHLD
SHLD
Lug
To CB803
RED
BRN
PT103
Magazine Photo P.C.Board
Loading Motor
(M101)
S102
M

Schematic Diagram (1/2)

IC	IC507 IC102 IC502 IC501 IC101
Transistor (Q, PT, PI)	PT103 PT101 PT102 PI101 Q1003 Q112 Q103 Q113 Q102 Q115 Q116 Q114



1
2
3
4
5
Magazine Photo P. C. Board
PT103 PS5022
DISC POSITION DETECTOR
Magazine LED P. C. Board
LD101 AN501
Sensor P. C. Board
PT101
PS5022-B1 x2
PT102
LED P. C. Board
LD102 AN501
LD103 AN501
R1001 1K
R1002 1K
S102 LOADING
M101 LOADING
Interrupt P. C. Board
S104 MAGAZINE
PI101 GP1S51
M102 ELEVATOR
Q1003 2SA937
DISC NO. DETECTOR
S103 HOME POSITION
HD101 PICK-UP UNIT
LASER DIODE
VR 2KB
TRACKING COIL
FOCUS COIL
S105 LIMIT
M104 SPINDLE
M103 SLED
Main P. C. Board (1/2)
CB501
CB502
CB503
CB504
CB101
CB102
(DISC-OK)
(D-OK LED)
(DISC-P)
(LOAD-P)
(+5V)
(LOAD M+)
(LOAD M-)
(LOAD SW)
(MAGZ-IN SW)
(ELV-M+)
(ELV-M-)
(DISC-NO LED)
(DISC-NO)
(HOME)
(LIMIT-SW)
(SPDL)
R505 47K
R506 390
R507 18K
R508 18K
R509 33K
R541 47K
R510 470
R501 220
R511 33K
C120 0.01
R136 2.2K
R148 33K
IC507 LB1836M
LOADING AND ELEVATOR MOTOR DRIVER
CONTROL
THERMAL SHUTDOWN
IN 1
IN 2
IN 3
IN 4
OUT 1
OUT 2
OUT 3
OUT 4
IC502 X24LC01SI
E²P-ROM
D OUT
D OUT ACK
DATA REGISTER
YDEC
E PROM 32 x 32
XDEC
WORD ADDRESS COUNTER
CONTROL LOGIC
H.V. GENERATION TIMING & CONTROL
START CYCLE
START STOP LOGIC
PIN
CX
R/W
INC
LOAD
Q112 DTC114TK
CD SCRATCH SWITCHING
R102 470K
E120 10/16
R103 270
R131 10K
R130 22K
R133 10K
R132 10K
R179 2.7K
VR102 15K
R134 560K
C119 56P
T.P. 2
R128 100K
R127 120K
T.P. 4
R129 15K
C118 0.047
C117 2700P
R167 100K
C115 0.1
R125 47K
R126 10K
C116 220P
R124 18K
C114 3900P
C113 0.022
R122 2.7K
R120 10K
E103 10/16
R123 180K
E117 0.47/50
VR101 150K
R135 100K
IC102 TA8191F
RF AMP AND SERVO LSI
Q102 2SA1037K
5V SWITCH
R121 27K
C130 4700P
R106 22K
C129 0.01
R109 18K
R110 1.5K
C124 3P
T.P. 1
R137 10K
R180 10K
R140 4.7K
C123 0.047
T.P. 3
R139 4.7K
C121 12P
R138 15K
AUTOMATIC LASER POWER CONTROL
Q103 2SB1237
R141 10-1/4
E101 100/6.3
E128 10/16
R181 22K
C140 4700P
R145 560
VR103 2.2K
C126 0.1
R144 1K
C122 0.01
C127 0.1
R146 15K
E105 3.3/25
R147 68K
R188 3.3K
C152 0.047
E121 10/16
R189 470K
Q113 DTC114TK
FOCUS SERVO GAIN SWITCH
E107 10/16
E109 4.7/16
E112 10/16
C108 0.01
CD SCRATCH SWITCHING
Q115 DTA124
R105 33K
Q116 DTC124K
D104 DAN202K
R108 100K
R107 220K
E102 10/16
R111 18K
R112 39K
C111 1000P
C150 0.047
C155 0.047
Q114 DTC124K
R190 47K
R514 10K
IC101 TC9236AF
DATA and SERVO PROCESSOR
C110 0.01
C106 3300P
C105 3300P
R113 1K
R115 10K
R192 10K
C107 100P
R116 47K
R114 220K
R117 2.2M
R118 33K
C109 0.01
C101 0.1
IC501 45552W02
μ-COM
R512 47K
R513 10K
TH501 100K
X501 4.19MHz
R603 100K
A
B
C
D
E
F
G
H


IC102
IC502
IC501
IC101
IC109
Q113
Q102
Q115
Q116
Q114
DING AND ELEVATOR MOTOR DRIVER
IC502 X24LC01SI
E²P-ROM
DATA REGISTER
YDEC
E PROM 32 x 32
XDEC
WORD ADDRESS COUNTER
CONTROL LOGIC
H.V. GENERATION TIMING & CONTROL
START CYCLE
START STOP LOGIC
D OUT ACK
CD SCRATCH SWITCHING
Q115 DTA124
Q116 DTC124K
IC101 TC9236AF
DATA and SERVO PROCESSOR
IC109 SC7SU04F
INVERTER
R196 470
R194 1K
R195 1K
Q114 DTC124K
D104 DAN202K
Q102 2SA1037K
5V SWITCH
IC102 TA8191F
RF AMP AND SERVO LSI
IC501 45552W02
µ-COM
X501 4.19MHz
TH501 100K
Q113 DTC114TK
FOCUS SERVO GAIN SWITCH
T.P. 2
T.P. 3
T.P. 4
TO MAIN P.C. BOARD (2/2)

NOTES:

1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. $P = \frac{1}{1,000,000}$

IC101

1	N.C	17	PS	33	2.05V	49	2.1V	65	0V
2	N.C	18	PS	34	2.07V	50	2.1V	66	N.C
3	N.C	19	PS	35	2.1V	51	2.2V	67	0V
4	N.C	20	N.C	36	2.1V	52	2.1V	68	0V
5	N.C	21	4.8V	37	N.C	53	2.5V	69	0V
6	N.C	22	0V	38	2.1V	54	0V	70	N.C
7	N.C	23	N.C	39	PS	55	2.53V	71	PS
8	N.C	24	0V	40	PS	56	N.C	72	PS
9	N.C	25	PS	41	4.2V	57	2.53V	73	PS
10	PS	26	N.C	42	5V	58	5V	74	5V
11	N.C	27	PS	43	2.5V	59	PS	75	PS
12	5V	28	2.1V	44	2.5V	60	PS	76	N.C
13	0V	29	2.1V	45	2.1V	61	2.1V	77	N.C
14	PS	30	2.1V	46	2.1V	62	2.1V	78	5V
15	PS	31	N.C	47	2.1V	63	2V	79	N.C
16	PS	32	2.1V	48	2.1V	64	2.2V	80	N.C

IC102

1	1.8V	17	0V	33	N.C
2	2.1V	18	2.1V	34	4.45V
3	2.1V	19	2.2V	35	4.19V
4	2.1V	20	2.15V	36	2.1V
5	2.1V	21	2.52V	37	2.05V
6	3.95V	22	0V	38	2.09V
7	0.18V	23	5.03V	39	2.09V
8	2.1V	24	2.17V	40	2.09V
9	2.45V	25	2.17V	41	2.09V
10	2.1V	26	2.35V	42	2.09V
11	2.1V	27	N.C	43	2.1V
12	2.2V	28	2.1V	44	2.1V
13	N.C	29	N.C		
14	2.08V	30	2.05V		
15	2.11V	31	2.1V		
16	5V	32	2.09V		

IC109

1	N.C
2	PS
3	0V
4	PS
5	5V

IC501

1	4.86V	17	4.81V	33	PS	49	4.99V
2	4.86V	18	0V	34	N.C	50	0.14V
3	N.C	19	4.85V	35	4.86V	51	0.17V
4	N.C	20	0V	36	PS	52	5.03V
5	N.C	21	0V	37	4.88V	53	0V
6	N.C	22	0V	38	4.85V	54	0V
7	N.C	23	0V	39	4.81V	55	5.03V
8	N.C	24	0V	40	4.86V	56	5.03V
9	0V	25	5.02V	41	PS	57	N.C
10	4.82V	26	5V	42	PS	58	N.C
11	N.C	27	PS	43	0V	59	N.C
12	0V	28	PS	44	N.C	60	N.C
13	4.84V	29	PS	45	0V	61	N.C
14	4.84V	30	PS	46	0V	62	N.C
15	4.84V	31	PS	47	4.31V	63	N.C
16	4.84V	32	PS	48	5.01V	64	N.C

IC502

1	N.C
2	N.C
3	N.C
4	0V
5	4.86V
6	4.86V
7	N.C
8	4.85V

IC507

1	7.34V	8	7.34V
2	4.83V	9	4.83V
3	0V	10	0V
4	7.34V	11	7.34V
5	0V	12	0V
6	4.83V	13	4.83V
7	0V	14	0V

	E	C	B
Q102	5.03V	4.2V	4.44V
Q103	4.5V	1.8V	3.95V
Q112	2.1V	2.05V	PS
Q113	2.1V	2.05V	PS
Q114	0V	PS	PS
Q115	PS	0V	PS
Q116	2.09V	2.1V	PS
Q1003	PS	0V	0.2V

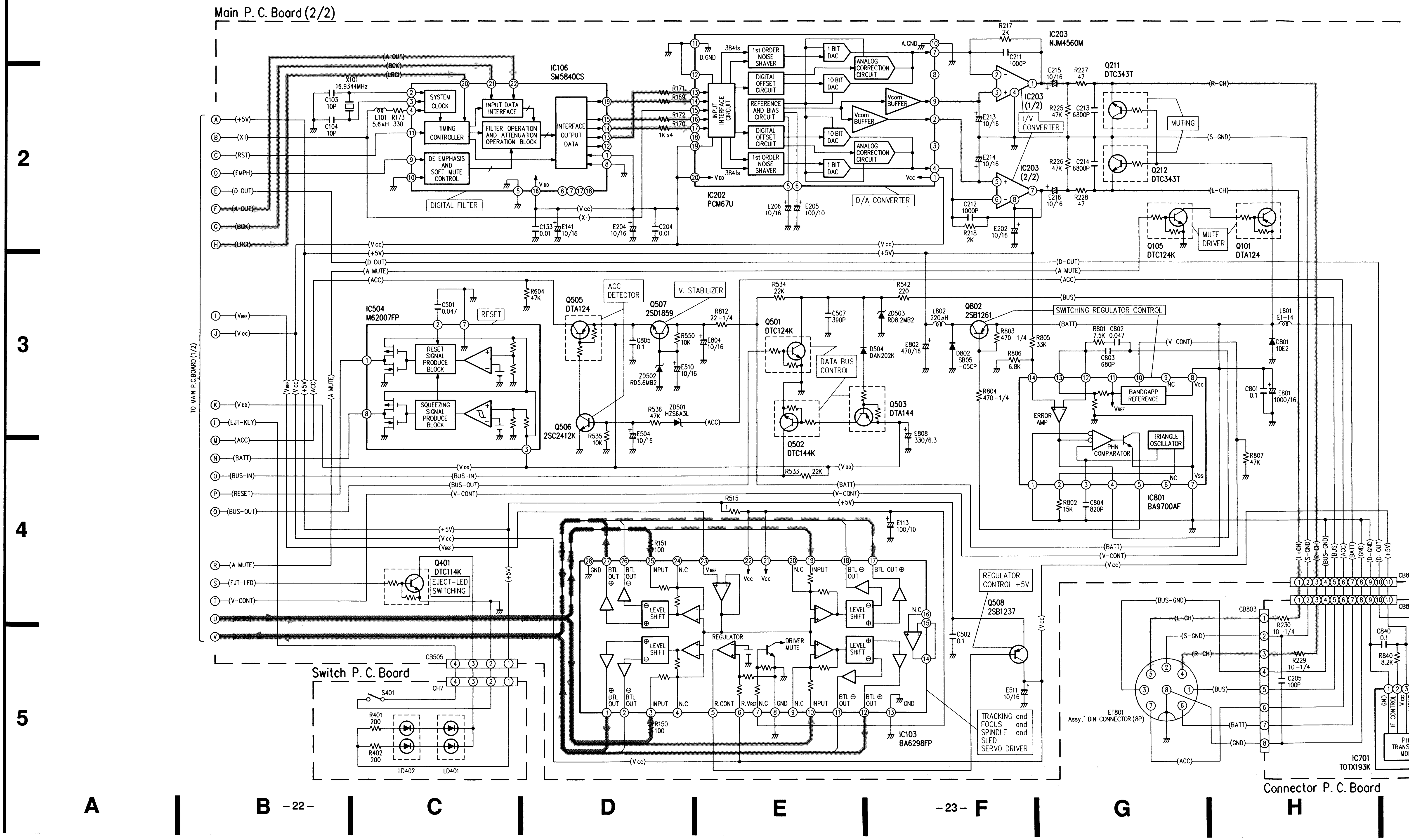
[Measuring Conditions]

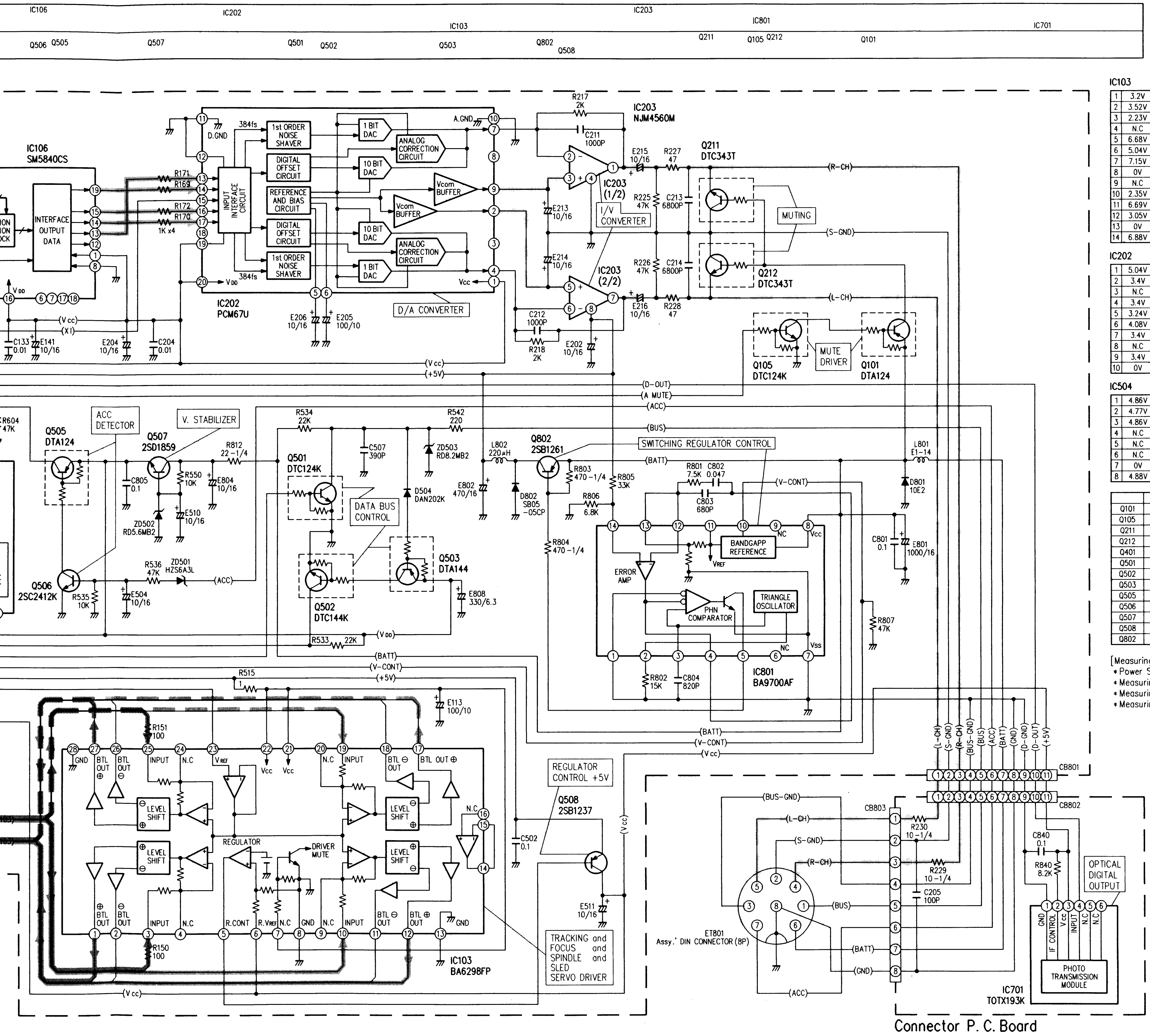
* Power Supply Voltage	:DC 14.4V
* Measuring Meter	:Digital Multi Volt Meter
* Measuring Point Reference	:Between Ground
* Measuring Condition	:Test Disc Play (A–BEX TCD–782 Track No.2 1kHz)

▨ CD Signal Line (Digital)
▬ Focus Error Signal Line
▬ ▬ Tracking Error Signal Line
▬ Spindle Drive Signal Line
▬ ▬ Sled Drive Signal Line

Schematic Diagram (2/2)

IC	IC504 IC106 IC202 IC103 IC203 IC801 IC701
Transistor (Q)	Q401 Q506 Q505 Q507 Q501 Q502 Q503 Q802 Q508 Q211 Q105 Q212 Q101


1
2
3
4
5
Main P. C. Board (2/2)
IC106 SM5840CS
X101 16.9344MHz
SYSTEM CLOCK
TIMING CONTROLLER
INPUT DATA INTERFACE
FILTER OPERATION AND ATTENUATION OPERATION BLOCK
DE EMPHASIS AND SOFT MUTE CONTROL
INTERFACE OUTPUT DATA
DIGITAL FILTER
IC202 PCM67U
INPUT INTERFACE CIRCUIT
1st ORDER NOISE SHAVER
DIGITAL OFFSET CIRCUIT
REFERENCE AND BIAS CIRCUIT
1 BIT DAC
10 BIT DAC
ANALOG CORRECTION CIRCUIT
Vcom BUFFER
D/A CONVERTER
IC203 NJM4560M
IC203 (1/2)
IC203 (2/2)
I/V CONVERTER
Q211 DTC343T
Q212 DTC343T
MUTING
Q105 DTC124K
Q101 DTA124
MUTE DRIVER
IC504 M62007FP
RESET SIGNAL PRODUCE BLOCK
SQUEEZING SIGNAL PRODUCE BLOCK
RESET
Q505 DTA124
ACC DETECTOR
Q507 2SD1859
V. STABILIZER
Q506 2SC2412K
Q501 DTC124K
DATA BUS CONTROL
Q502 DTC144K
Q503 DTA144
Q802 2SB1261
SWITCHING REGULATOR CONTROL
IC801 BA9700AF
BANDGAPP REFERENCE
ERROR AMP
PHN COMPARATOR
TRIANGLE OSCILLATOR
Q401 DTC114K
EJECT-LED SWITCHING
IC103 BA6298FP
LEVEL SHIFT
REGULATOR
DRIVER MUTE
REGULATOR CONTROL +5V
Q508 2SB1237
TRACKING and FOCUS and SPINDLE and SLED SERVO DRIVER
TO MAIN P.C.BOARD (1/2)
Switch P. C. Board
S401
LD402
LD401
CB505
CH7
CB803
ET801 Assy.' DIN CONNECTOR (8P)
IC701 TOTX193K
Connector P. C. Board
A
B
C
D
E
F
G
H


IC106
IC202
IC103
IC203
IC801
IC701
Q506 Q505
Q507
Q501 Q502
Q503
Q802
Q508
Q211
Q105 Q212
Q101
IC106
SM5840CS
INTERFACE OUTPUT DATA
R171
R169
R172
R170
1K x4
VDD
1st ORDER NOISE SHAVER
DIGITAL OFFSET CIRCUIT
REFERENCE AND BIAS CIRCUIT
INPUT INTERFACE CIRCUIT
1 BIT DAC
10 BIT DAC
ANALOG CORRECTION CIRCUIT
Vcom BUFFER
384fs
D.GND
A.GND
IC202
PCM67U
D/A CONVERTER
E206 10/16
E205 100/10
E204 10/16
C204 0.01
C133 0.01
E141 10/16
R217 2K
C211 1000P
IC203
NJM4560M
IC203 (1/2)
IC203 (2/2)
I/V CONVERTER
E213 10/16
E214 10/16
E215 10/16
E216 10/16
R227 47
R228 47
R225 47K
R226 47K
C213 6800P
C214 6800P
C212 1000P
R218 2K
E202 10/16
Q211
DTC343T
Q212
DTC343T
MUTING
MUTE DRIVER
Q105
DTC124K
Q101
DTA124
(R-CH)
(S-GND)
(L-CH)
(Vcc)
(+5V)
(D-OUT)
(A MUTE)
(ACC)
(BUS)
(BATT)
(V-CONT)
(VDD)
ACC DETECTOR
V. STABILIZER
Q505
DTA124
Q507
2SD1859
R812 22-1/4
C805 0.1
R550 10K
E804 10/16
E510 10/16
ZD502 RD5.6MB2
Q506
2SC2412K
R535 10K
R536 47K
ZD501 HZS6A3L
E504 10/16
R534 22K
R542 220
C507 390P
ZD503 RD8.2MB2
D504 DAN202K
Q501
DTC124K
DATA BUS CONTROL
Q502
DTC144K
Q503
DTA144
E808 330/6.3
R533 22K
L802 220μH
E802 470/16
D802 SB05-05CP
Q802
2SB1261
R803 470-1/4
R805 33K
R806 6.8K
R804 470-1/4
SWITCHING REGULATOR CONTROL
R801 7.5K
C802 0.047
C803 680P
BANDGAPP REFERENCE
ERROR AMP
PHN COMPARATOR
TRIANGLE OSCILLATOR
VREF
NC
Vcc
Vss
R802 15K
C804 820P
IC801
BA9700AF
L801 E1-14
D801 10E2
C801 0.1
E801 1000/16
R807 47K
R515 1
E113 100/10
R151 100
R150 100
GND
BTL OUT ⊕
BTL OUT ⊖
INPUT
N.C
VREF
Vcc
BTL ⊖ OUT
BTL OUT ⊕
LEVEL SHIFT
REGULATOR
DRIVER MUTE
R.CONT
R.VREF
IC103
BA6298FP
REGULATOR CONTROL +5V
Q508
2SB1237
C502 0.1
E511 10/16
TRACKING and FOCUS and SPINDLE and SLED SERVO DRIVER
(L-CH) (S-GND) (R-CH) (BUS-GND) (BUS) (ACC) (BATT) (GND) (D-GND) (D-OUT) (+5V)
CB801
CB802
CB803
(BUS-GND)
(GND)
R230 10-1/4
R229 10-1/4
C205 100P
C840 0.1
R840 8.2K
ET801
Assy.' DIN CONNECTOR (8P)
OPTICAL DIGITAL OUTPUT
GND
IF CONTROL
Vcc
INPUT
N.C
PHOTO TRANSMISSION MODULE
IC701
TOTX193K
Connector P. C. Board

IC103

1	3.2V	15	6.88V
2	3.52V	16	N.C
3	2.23V	17	3.45V
4	N.C	18	3.25V
5	6.68V	19	2.05V
6	5.04V	20	N.C
7	7.15V	21	7.12V
8	0V	22	7.12V
9	N.C	23	2.1V
10	2.35V	24	N.C
11	6.69V	25	2.05V
12	3.05V	26	3.3V
13	0V	27	3.4V
14	6.88V	28	0V

IC106

1	5.04V	12	N.C
2	PS	13	PS
3	PS	14	PS
4	PS	15	PS
5	0V	16	5.04V
6	N.C	17	N.C
7	N.C	18	N.C
8	0V	19	PS
9	5.02V	20	PS
10	0V	21	PS
11	4.85V	22	PS

IC202

1	5.04V	11	0V
2	3.4V	12	0V
3	N.C	13	PS
4	3.4V	14	PS
5	3.24V	15	PS
6	4.08V	16	PS
7	3.4V	17	PS
8	N.C	18	N.C
9	3.4V	19	5.04V
10	0V	20	5.04V

IC203

1	4.57V
2	3.4V
3	3.4V
4	0V
5	3.4V
6	3.4V
7	4.58V
8	7.31V

IC504

1	4.86V
2	4.77V
3	4.86V
4	N.C
5	N.C
6	N.C
7	0V
8	4.88V

IC701

1	0V
2	5V
3	5V
4	PS
5	N.C
6	N.C

IC801

1	0V	8	13.1V
2	0.87V	9	N.C
3	1.7V	10	4.82V
4	1.18V	11	N.C
5	PS	12	1.25V
6	N.C	13	1.25V
7	0V	14	1.25V

	E	C	B
Q101	13.02V	0V	12.96V
Q105	0V	12.98V	0V
Q211	0V	0V	0V
Q212	0V	0V	0V
Q401	0V	0.12V	4.81V
Q501	0V	PS	PS
Q502	0V	PS	PS
Q503	4.9V	PS	PS
Q505	4.86V	4.85V	0V
Q506	0V	0V	0.6V
Q507	4.86V	12.86V	5.46V
Q508	7.31V	5.04V	6.68V
Q802	12.98V	7.54V	12.49V

[Measuring Conditions]
- *Power Supply Voltage : DC 14.4V
- *Measuring Meter : Digital Multi Volt Meter
- *Measuring Point Reference : Between Ground
- *Measuring Condition : Test Disc Play (A-BEX TCD-782 Track No.2 1kHz

▨ CD Signal Line (Digital)
▨ L-ch Signal Line
▨ R-ch Signal Line
▨ Focus Error Signal Line
▨ Tracking Error Signal Line
▨ Spindle Drive Signal Line
▨ Sled Drive Signal Line

NOTES:
1. All resistance values are in ohms. K = 1,000
2. All capacitance values are in microfarads. P = $\frac{1}{1,000,000}$

Electrical Parts List

Resistor : Carbon resistors under 1/4 watts are not mentioned in the parts list, please confirm them by schematic diagram.

Capacitor : μF = microfarads, pF = picofarads

Abbreviations

RES. = Resistor
C.F. = Carbon Film
M.F. = Metal Film
M.O. = Metal Oxide Film
M.P. = Metal Plate
TR. = Transistor
TRANS. = Transformer
CP. = Chip

CAP. = Capacitor
ELY. = Electrolytic
CER. = Ceramic
MYL. = Mylar
TAN. = Tantalum
POLY. = Polystyrol
PP. = Polypropylene
PLT. = Polyethylene
PF. = Polyester Film

Main P. C. Board

IC's

Symbol No.	Part No.	Description
IC101	51T25985W02	TC9236AF
IC102	51T25984W01	TA8191F
IC103	51T45577W02	BA6298FP
IC106	51T35105W02	SM5840CS
IC109	51T45285W01	SC7SU04F
IC202	51T35409W03	PCM67U
IC203	51T93337F01	NJM4560M
or	51T92001F01	BA4560F
IC501	51T45552W02	45552W02
IC502	51T45522W02	X24LC01SI
IC504	51T35308W01	M62007FP
IC507	51T45571W02	LB1836M
IC801	51T35436W02	BA9700AF

Transistors

Symbol No.	Part No.	Description
Q101	48T62966F03	CP., DTA124
or	48T64221F02	CP., UN2112
Q102	48T63420F01	CP., 2SA1037K
Q103	48T83417F03	2SB1237
Q105	48T62967F03	CP., DTC124K
or	48T64222F02	CP., UN2212
Q112	48T62967F09	CP., DTC114TK
or	48T64222F05	CP., UN2215
Q113	48T62967F09	CP., DTC114TK
or	48T64222F05	CP., UN2215
Q114	48T62967F03	CP., DTC124K
or	48T64222F02	CP., UN2212
Q115	48T62966F03	CP., DTA124
or	48T64221F02	CP., UN2112
Q116	48T62967F03	CP., DTC124K
or	48T64222F02	CP., UN2212
Q211	48T62967F33	CP., DTC343T
Q212	48T62967F33	CP., DTC343T
Q401	48T62967F02	CP., DTC114K
Q501	48T62967F03	CP., DTC124K
or	48T64222F02	CP., UN2212
Q502	48T62967F04	CP., DTC144K
or	48T64222F03	CP., UN2213
Q503	48T62966F04	CP., DTA144
or	48T64221F03	CP., UN2113
Q505	48T62966F03	CP., DTA124
or	48T64221F02	CP., UN2112
Q506	48T63417F01	CP., 2SC2412K
Q507	48T83835F03	2SD1859
Q508	48T83417F03	2SB1237
Q802	48T15511W02	CP., 2SB1261

Diodes

Symbol No.	Part No.	Description
D104	48T63462F01	CP., DAN202K
or	48T52446F01	CP., MA151WK
D504	48T63462F01	CP., DAN202K
or	48T52446F01	CP., MA151WK
D801	48T81044F01	10E2
D802	48T15702W01	CP., SB05-05CP
ZD501	48T25766W03	Zener, HZS6A3L
ZD502	48T62934F22	Zener, CP. RD5.6MB2
ZD503	48T62934F34	Zener, CP. RD8.2MB2

Crystals

Symbol No.	Part No.	Description
X101	91T25806W92	16.9344MHz
X501	91T15285W01	CER. Lock, 4.19MHz

Coils

Symbol No.	Part No.	Description
L101	24T16403W24	Inductor, 5.6μH
L801	25T47510F01	Choke Filter, EI-14
L802	24T45570W17	CDR105, 220μH

Symbol No.	Part No.	Description	
Thermistor			
TH501	48T93439F06	100K ohm	
Capacitors			
C101	08S53332F57	CP.,	0.1μF
E101	23S61523F08	ELY.,	100μF / 6.3V
E102	23S61523F12	ELY.,	10μF / 16V
C103	08S65128F12	CP.,	10pF
E103	23S61523F12	ELY.,	10μF / 16V
C104	08S65128F12	CP.,	10pF
C105	08S65128F63	CP.,	3300pF
E105	23S61523F16	ELY.,	3.3μF / 25V
C106	08S65128F63	CP.,	3300pF
C107	08S65128F35	CP.,	100pF
E107	23T74437F32	TAN.,	10μF / 16V
C108	08S65128F69	CP.,	0.01μF
E108	23T74437F30	TAN.,	4.7μF / 16V
C109	08S65128F69	CP.,	0.01μF
E109	23T74437F30	TAN.,	4.7μF / 16V
C110	08S65128F69	CP.,	0.01μF
E110	23T74437F32	TAN.,	10μF / 16V
C111	08S65128F57	CP.,	1000pF
E111	23T74437F32	TAN.,	10μF / 16V
E112	23T74437F32	TAN.,	10μF / 16V
C113	08T15399W01	CP.,	0.022μF
E113	23T25149W13	ELY.,	100μF / 10V
C114	08S65128F64	CP.,	3900pF
C115	08T15807W05	CP.,	0.1μF
C116	08S65128F43	CP.,	220pF
C117	08S65128F62	CP.,	2700pF
E117	23S61523F28	ELY.,	0.47μF / 50V
C118	08T15399W03	CP.,	0.047μF
C119	08S65128F29	CP.,	56pF
C120	08S65128F69	CP.,	0.01μF
E120	23S61523F12	ELY.,	10μF / 16V
C121	08S65128F13	CP.,	12pF
E121	23S61523F12	ELY.,	10μF / 16V
C122	08S65128F69	CP.,	0.01μF
C123	08T15399W03	CP.,	0.047μF
C124	08S82122F06	CP.,	3pF
C126	08T15807W05	CP.,	0.1μF
C127	08T15807W05	CP.,	0.1μF
E128	23T74437F32	TAN.,	10μF / 16V
C129	08S65128F69	CP.,	0.01μF
C130	08S65128F65	CP.,	4700pF
C133	08S65128F69	CP.,	0.01μF
C140	08S65128F65	CP.,	4700pF
E141	23T74437F32	TAN.,	10μF / 16V
C143	08S65128F69	CP.,	0.01μF
C150	08T15399W03	CP.,	0.047μF
C151	08T15399W03	CP.,	0.047μF
C152	08T15399W03	CP.,	0.047μF
C153	08T15399W03	CP.,	0.047μF
C155	08T15399W03	CP.,	0.047μF
E202	23T25149W09	ELY.,	10μF / 16V
C204	08T35388W17	TF,	0.01μF
E204	23T25149W09	ELY.,	10μF / 16V
E205	23T25149W13	ELY.,	100μF / 10V
E206	23T25149W09	ELY.,	10μF / 16V
C211	08T35388W05	TF,	1000pF
C212	08T35388W05	TF,	1000pF
C213	08T35388W15	TF,	6800pF
E213	23T25149W09	ELY.,	10μF / 16V
C214	08T35388W15	TF,	6800pF
E214	23T25149W09	ELY.,	10μF / 16V
E215	23T25149W09	ELY.,	10μF / 16V
E216	23T25149W09	ELY.,	10μF / 16V
C501	08T15399W03	CP.,	0.047μF
C502	08S65480F63	CER.,	0.1μF
E504	23S61523F12	ELY.,	10μF / 16V
C507	08S65128F49	CP.,	390pF
E510	23S61523F12	ELY.,	10μF / 16V
E511	23T25149W09	ELY.,	10μF / 16V
C801	08S53332F57	CP.,	0.1μF
E801	23T00149L32	ELY.,	1000μF / 16V
C802	08T15399W03	CP.,	0.047μF
E802	23T00149L28	ELY.,	470μF / 16V
C803	08S65128F55	CP.,	680pF
C804	08S82122F59	CP.,	820pF
E804	23S61523F12	ELY.,	10μF / 16V
C805	08S53332F57	CP.,	0.1μF
E808	23S16086W02	ELY.,	330μF / 6.3V
Resistors (All resistors are chip 1/10W ± 5% unless otherwise noted.)			
R102	06S64996F18	470K ohm	
R103	06S64995F39	270 ohm	
R105	06S64995F89	33K ohm	
R106	06S64995F85	22K ohm	
R107	06S64996F10	220K ohm	
R108	06S64996F02	100K ohm	
R109	06S64995F83	18K ohm	
R110	06S64995F57	1.5K ohm	
R111	06S64995F83	18K ohm	
R112	06S64995F91	39K ohm	

Symbol No.	Part No.	Description
R113	06S64995F53	1K ohm
R114	06S64996F10	220K ohm
R115	06S64995F77	10K ohm
R116	06S64995F93	47K ohm
R117	06S64996F30	2.2M ohm
R118	06S64995F89	33K ohm
R120	06S64995F77	10K ohm
R121	06S64995F87	27K ohm
R122	06S64995F63	2.7K ohm
R123	06S64996F08	180K ohm
R124	06S64995F83	18K ohm
R125	06S64996F93	47K ohm
R126	06S64995F77	10K ohm
R127	06S64996F04	120K ohm
R128	06S64996F02	100K ohm
R129	06S64995F81	15K ohm
R130	06S64995F85	22K ohm
R131	06S64995F77	10K ohm
R132	06S64995F77	10K ohm
R133	06S64995F77	10K ohm
R134	06S64996F20	560K ohm
R135	06S64996F02	100K ohm
R136	06S64995F61	2.2K ohm
R137	06S64995F77	10K ohm
R138	06S64995F81	15K ohm
R139	06S64995F69	4.7K ohm
R140	06S64995F69	4.7K ohm
R141	06T70072F05	10 ohm 1/4W
R144	06S64995F53	1K ohm
R145	06S64995F47	560 ohm
R146	06S64995F81	15K ohm
R147	06S64995F97	68K ohm
R148	06S64995F89	33K ohm
R150	06S64995F29	100 ohm
R151	06S64995F29	100 ohm
R167	06S64996F02	100K ohm
R169	06S64995F53	1K ohm
R170	06S64995F53	1K ohm
R171	06S64995F53	1K ohm
R172	06S64995F53	1K ohm
R173	06S64995F41	330 ohm
R179	06S64995F63	2.7K ohm
R180	06S64995F77	10K ohm
R181	06S64995F85	22K ohm
R188	06S64995F65	3.3K ohm
R189	06S64996F18	470K ohm
R190	06S64995F93	47K ohm
R192	06S64995F77	10K ohm
R194	06S64995F53	1K ohm
R195	06S64995F53	1K ohm
R196	06S64995F45	470 ohm
R217	06S64995F60	2K ohm

Symbol No.	Part No.	Description
R218	06S64995F60	2K ohm
R225	06S64995F93	47K ohm
R226	06S64995F93	47K ohm
R227	06S64995F21	47 ohm
R228	06S64995F21	47 ohm
R501	06S64995F37	220 ohm
R505	06S64995F93	47K ohm
R506	06S64995F43	390 ohm
R507	06S64995F83	18K ohm
R508	06S64995F83	18K ohm
R509	06S64995F89	33K ohm
R510	06S64995F45	470 ohm
R511	06S64995F89	33K ohm
R512	06S64995F93	47K ohm
R513	06S64995F77	10K ohm
R514	06S64995F77	10K ohm
R533	06S64995F85	22K ohm
R534	06S64995F85	22K ohm
R535	06S64995F77	10K ohm
R536	06S64995F93	47K ohm
R541	06S64995F93	47K ohm
R542	06S64995F37	220 ohm
R550	06S64995F77	10K ohm
R603	06S64996F02	100K ohm
R604	06S64995F93	47K ohm
R801	06S64995F74	7.5K ohm
R802	06S64995F81	15K ohm
R803	06T70072F45	470 ohm 1/4W
R804	06T70072F45	470 ohm 1/4W
R805	06S64995F89	33K ohm
R806	06S64995F73	6.8K ohm
R807	06S64995F93	47K ohm
R812	06T70072F13	22 ohm 1/4W
VR101	18T91059F20	Variable, 150K ohm
VR102	18T45241W14	Variable, 15K ohm
VR103	18T45241W09	Variable, 2.2K ohm

Connector P. C. Board

IC

IC701	51T45264W01	TOTX193K

Symbol No.	Part No.	Description
Capacitors		
C205	08S65128F35	CP., 100pF
C840	08S53332F57	CP., 0.1μF
Resistors (All resistors are chip 1/4W ± 5% unless otherwise noted.)		
R229	06T70072F05	10 ohm
R230	06T70072F05	10 ohm
R840	06S64995F75	8.2K ohm 1/10W
Switch P. C. Board		
LED's		
LD401	48T16477W01	BG1204W (GRN)
LD402	48T16477W01	BG1204W (GRN)
Switch		
S401	40T35140W22	Tact, SKQDAB (EJECT)
Resistors (All resistors are chip 1/10W ± 5% unless otherwise noted.)		
R401	06S64995F36	200 ohm
R402	06S64995F36	200 ohm
Miscellaneous		
ET801	01T15719W10	Assy., DIN Connector (8P)
or	01T45051W02	Assy., DIN Connector (8P)
or	01T45595W01	Assy., DIN Connector (8P)
HD101	88T15309W01	Pick-Up Unit, SF-87.5
LD101	48T16057W01	LED, AN501 (RED)

Symbol No.	Part No.	Description
LD102	48T16057W01	LED, AN501 (RED)
LD103	48T16057W01	LED, AN501 (RED)
M101	59T90879F01	Motor, Load 6V-260mA (LOADING)
M102	59T15716W01	Motor, Load 8V-330mA (ELEVATOR)
M103	59T52973F03	Motor, Servo 6V-210mA (SLED)
PI101	48T15722W01	Photo Interrupt, GP1S51
PT101	48T15938W03	Transistor, Photo PS5022-B1
PT102	48T15938W03	Transistor, Photo PS5022-B1
PT103	48T15938W02	Transistor, Photo PS5022
Q1003	48T51089F04	Transistor, 2SA937
S102	40T71025F01	Switch, Detector (LOADING)
S103	40T71025F01	Switch, Detector (HOME POSITION)
S104	40T71025F01	Switch, Detector (MAGAZINE)
S105	40T71025F01	Switch, Detector (LIMIT)

Packing Assembly Parts List

Symbol No.		Part No.	Description	Symbol No.	Part No.	Description
	101	56S41054W13	Carton, Packing (Individual)			
	102	56D41454W01	Tray, Packing (Top)			
	103	56D41454W02	Tray, Packing (Bottom)			
	104	01V43800W89	Assy., kit Installation			
○	105	68P40870W77	Owner's Manual			
△	105	68P40870W78	Owner's Manual			
●	105	68P40870W77	Owner's Manual			
	106	01T45053W01	Assy., DIN Connector 5m			
	or	01T15904W02	Assy., DIN Connector 5m			
	or	01T45150W01	Assy., DIN Connector 5m			
	107	56A67299F02	Sack, Polyethylene			

Notes : ○ : For North American Model only, △ : For General Foreign Model only,
● : For Canadian Model only, Others : Common.

Packing Method View

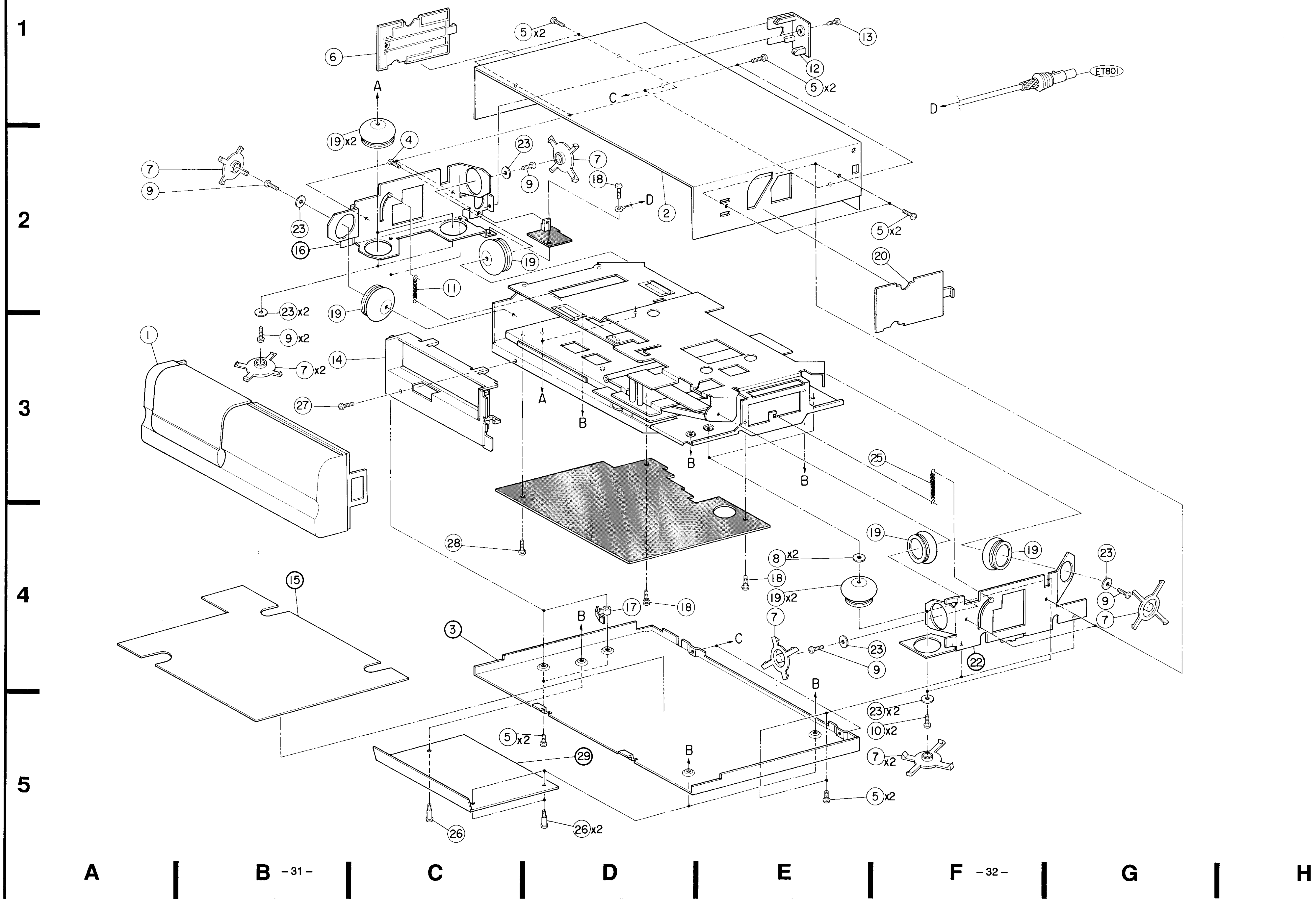
- Refer to the Service Manual · 5957 (68P32133W02).

Cabinet Assembly Parts List

Note : The parts without parts list are not supplied.

Symbol No.	Index	Part No.	Description	Symbol No.	Index	Part No.	Description
1	3-B	13T45532W01	Assy., Front Escutcheon				
2	2-D	15D41083W02	Cover, Top				
4	2-C	03S70494F10	Screw, Pan (M2.6×10)				
5		03S38013W12	Screw, Bind (M2.6×4)				
6	1-B	15B41292W01	Cover, Plate (L)				
7		15B40809W01	Holder, Damper (C)				
8	4-E	34A48026W01	Washer, Damper				
9		03A48040W01	Screw, Damper (M2.6×3)				
10	5-E	03A48040W02	Screw, Damper (M2.6×6)				
11	3-C	41A41238W01	Spring, Extension (L)				
12	1-E	15A41448W01	Cover, Connector				
13	1-E	03S44205G34	Screw, Pan (M2.6×5)				
14	3-C	64B41449W01	Assy., Plate Inner				
17	4-D	15A41116W01	Holder, Wire				
18		03S44205G48	Screw, Pan (M2.6×5)				
19		75B48059W01	Damper, DR (D)				
20	2-F	15B41293W01	Cover, Plate (R)				
23		04S40075G60	Washer, Flat Metal (M3.2)				
25	3-E	41A41238W02	Spring, Extension (R)				
26		03A48046W01	Screw, Transport (M4×22.5)				
27	3-B	03S44205G98	Screw, Pan (M2.6×5)				
28	4-C	03A38056W01	Screw, Special (M2.6×6)				

Exploded View (Cabinet)


1
2
3
4
5
1
2
3
4
5x2
5x2
5x2
5x2
5x2
5x2
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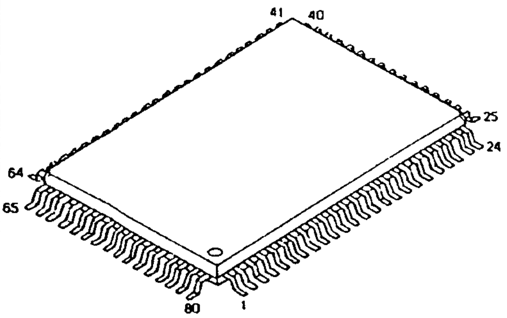
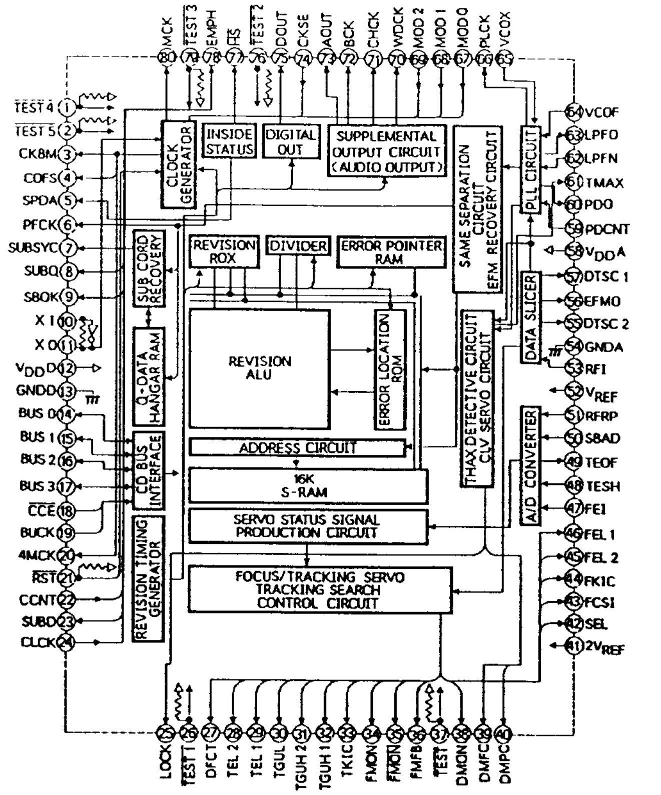
7
7
7x2
7
7
7x2
8x2
9
9
9x2
9
9
10x2
11
12
13
14
15
16
17
18
18
18
19x2
19
19
19
19
19x2
20
22
23
23
23x2
23
23
23x2
25
26
26x2
27
28
29
ET801
A
A
B
B
B
B
B
B
B
C
C
D
D
A
B
C
D
E
F
G
H

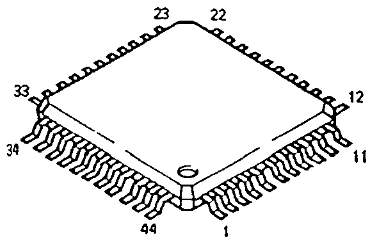
Semi-Conductor Lead Identifications

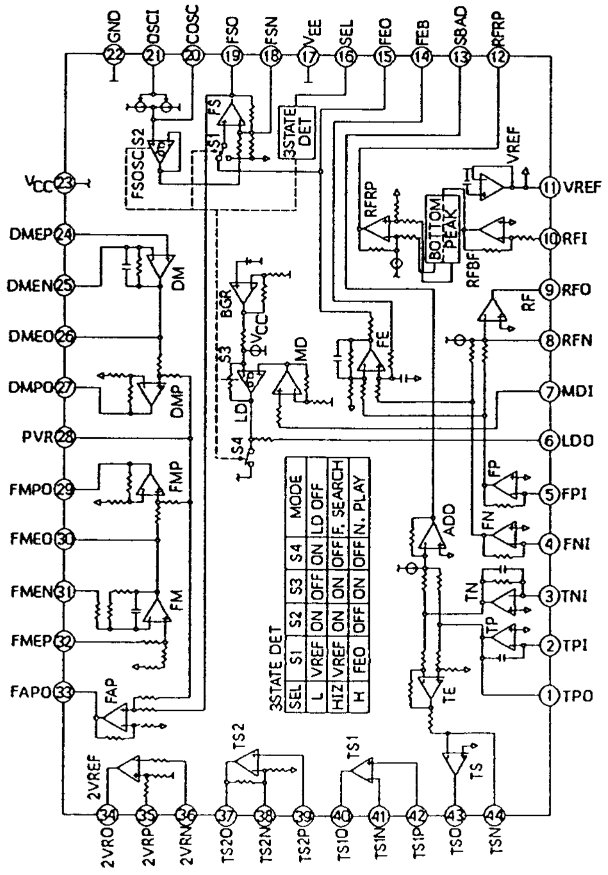
TC9236AF : IC101


41
40
25
24
64
65
80
1


TEST4 ①
TEST5 ②
CK8M ③
COFS ④
SPDA ⑤
PFCK ⑥
SUBSYC ⑦
SUBQ ⑧
SBOK ⑨
X I ⑩
X O ⑪
VDDD ⑫
GNDD ⑬
BUS 0 ⑭
BUS 1 ⑮
BUS 2 ⑯
BUS 3 ⑰
CCE ⑱
BUCK ⑲
4MCK ⑳
RST ㉑
CCNT ㉒
SUBD ㉓
CLCK ㉔
LOCK ㉕
TEST 1 ㉖
DFCT ㉗
TEL 2 ㉘
TEL 1 ㉙
TGUL ㉚
TGUH 2 ㉛
TGUH 1 ㉜
TKIC ㉝
FMON ㉞
FMON ㉟
FMFB ㊱
TEST ㊲
DMON ㊳
DMFC ㊴
DMPC ㊵
㊶ 2VREF
㊷ SEL
㊸ FCSI
㊹ FKIC
㊺ FEL 2
㊻ FEL 1
㊼ FEI
㊽ TESH
㊾ TEOF
㊿ SBAD
(51) RFRP
(52) VREF
(53) RFI
(54) GNDA
(55) DTSC 2
(56) EFMO
(57) DTSC 1
(58) VDDA
(59) PDCNT
(60) PDO
(61) TMAX
(62) LPFN
(63) LPFO
(64) VCOF
(65) VCOX
(66) PLCK
(67) MOD0
(68) MOD1
(69) MOD2
(70) WDCK
(71) CHCK
(72) BCK
(73) AOUT
(74) CKSE
(75) DOUT
(76) TEST 2
(77) FS
(78) EMPH
(79) TEST 3
(80) MCK
CLOCK GENERATOR
INSIDE STATUS
DIGITAL OUT
SUPPLEMENTAL OUTPUT CIRCUIT (AUDIO OUTPUT)
SAME SEPARATION CIRCUIT
EFM RECOVERY CIRCUIT
PLL CIRCUIT
SUB CORD RECOVERY
REVISION ROX
DIVIDER
ERROR POINTER RAM
Q-DATA HANGAR RAM
REVISION ALU
ERROR LOCATION ROM
THAX DETECTIVE CIRCUIT
CLV SERVO CIRCUIT
DATA SLICER
CD BUS INTERFACE
ADDRESS CIRCUIT
16K S-RAM
A/D CONVERTER
SERVO STATUS SIGNAL PRODUCTION CIRCUIT
REVISION TIMING GENERATOR
FOCUS/TRACKING SERVO TRACKING SEARCH CONTROL CIRCUIT

TA8191F : IC102

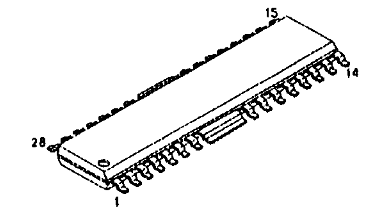

23
22
33
12
34
11
44
1

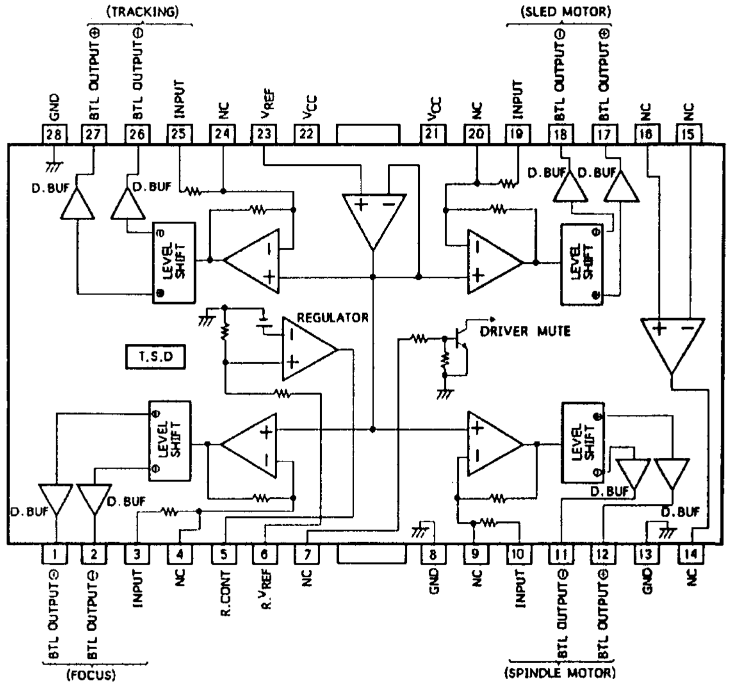

GND ㉒
OSCI ㉑
COSC ⑳
FSO ⑲
FSN ⑱
VEE ⑰
SEL ⑯
FEO ⑮
FEB ⑭
SBAD ⑬
RFRP ⑫
VCC ㉓
DMEP ㉔
DMEN ㉕
DMEO ㉖
DMPO ㉗
PVR ㉘
FMPO ㉙
FMEO ㉚
FMEN ㉛
FMEP ㉜
FAPO ㉝
⑪ VREF
⑩ RFI
⑨ RFO
⑧ RFN
⑦ MDI
⑥ LDO
⑤ FPI
④ FNI
③ TNI
② TPI
① TPO
2VRO ㉞
2VRP ㉟
2VRN ㊱
TS2O ㊲
TS2N ㊳
TS2P ㊴
TS1O ㊵
TS1N ㊶
TS1P ㊷
TSO ㊸
TSN ㊹
FSOSC
S2
S1
FS
3STATE DET
VREF
RFRP
BOTTOM
PEAK
RFBF
RF
DM
BGR
VCC
S3
LD
MD
FE
DMP
S4
FMP
FM
FAP
ADD
FP
FN
TN
TP
TE
TS
2VREF
TS2
TS1

3STATE DET

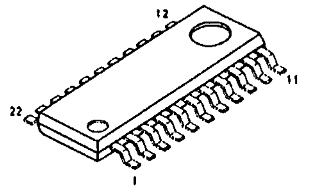
SEL	S1	S2	S3	S4	MODE
L	VREF	ON	OFF	ON	LD OFF
HIZ	VREF	ON	ON	OFF	F. SEARCH
H	FEO	OFF	ON	OFF	N. PLAY

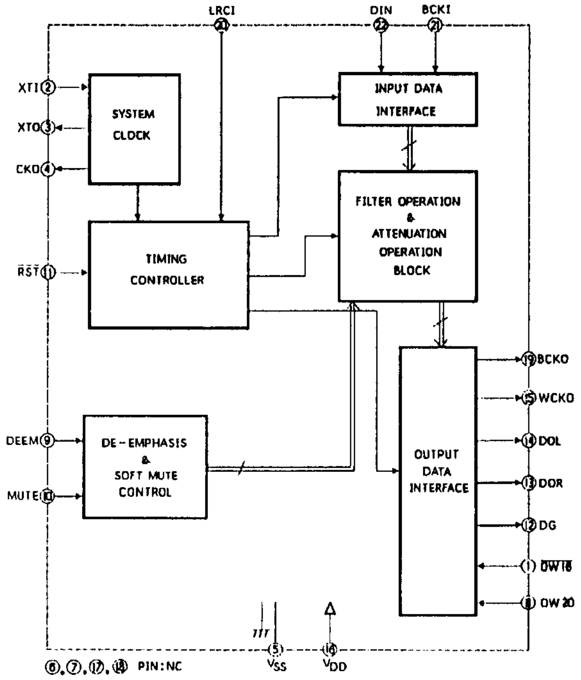
BA6298FP : IC103



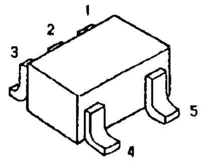

(TRACKING)
(SLED MOTOR)
28 GND
27 BTL OUTPUT⊕
26 BTL OUTPUT⊖
25 INPUT
24 NC
23 VREF
22 VCC
21 VCC
20 NC
19 INPUT
18 BTL OUTPUT⊖
17 BTL OUTPUT⊕
16 NC
15 NC
D. BUF
LEVEL SHIFT
REGULATOR
DRIVER MUTE
T.S.D
1 BTL OUTPUT⊖
2 BTL OUTPUT⊕
3 INPUT
4 NC
5 R.CONT
6 R. VREF
7 NC
8 GND
9 NC
10 INPUT
11 BTL OUTPUT⊖
12 BTL OUTPUT⊕
13 GND
14 NC
(FOCUS)
(SPINDLE MOTOR)

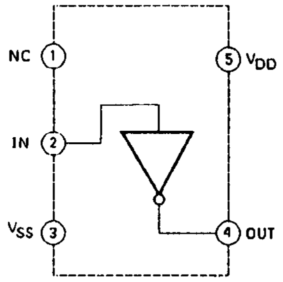
SM5840CS : IC106



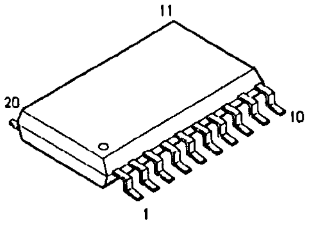

LRCI ⑳
DIN ㉒
BCKI ㉑
XTI ②
XTO ③
CKO ④
RST ⑪
DEEM ⑨
MUTE ⑩
SYSTEM CLOCK
INPUT DATA INTERFACE
FILTER OPERATION & ATTENUATION OPERATION BLOCK
TIMING CONTROLLER
DE-EMPHASIS & SOFT MUTE CONTROL
OUTPUT DATA INTERFACE
⑲ BCKO
⑮ WCKO
⑭ DOL
⑬ DOR
⑫ DG
① OW18
⑧ OW20
⑤ VSS
⑯ VDD
⑥, ⑦, ⑰, ⑱ PIN:NC

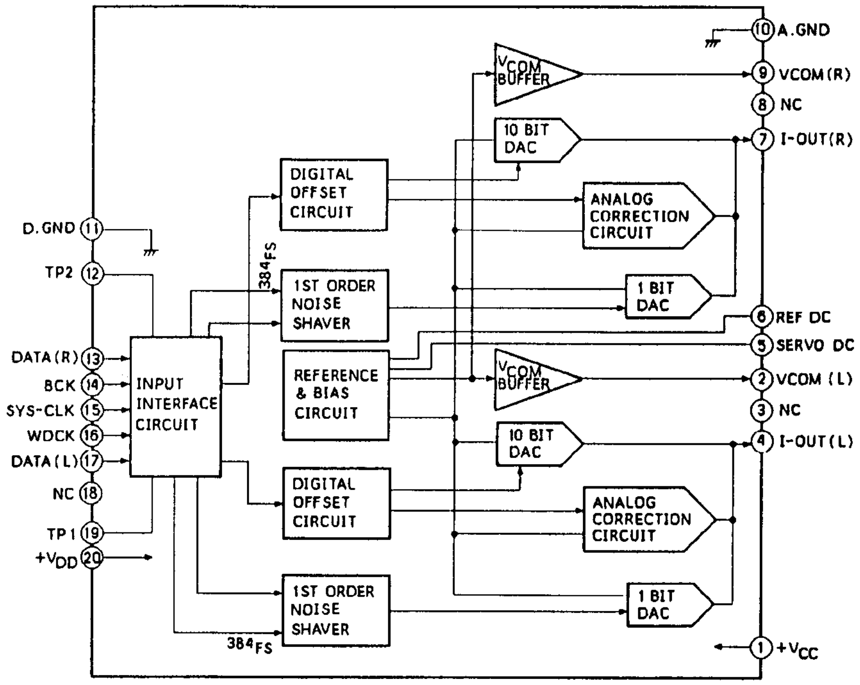
SC7SU04F : IC109



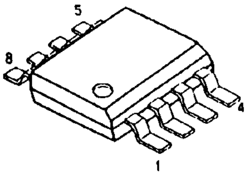

NC ①
IN ②
VSS ③
④ OUT
⑤ VDD

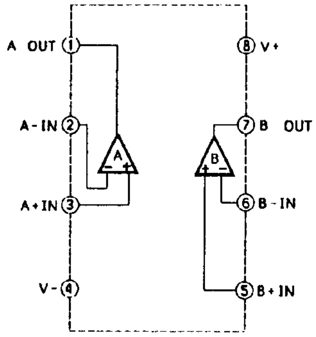
PCM67U : IC202



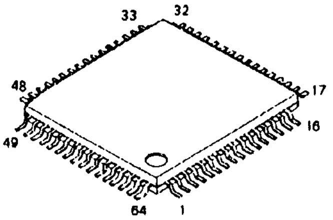

10 A.GND
VCOM BUFFER
9 VCOM(R)
8 NC
10 BIT DAC
7 I-OUT(R)
DIGITAL OFFSET CIRCUIT
ANALOG CORRECTION CIRCUIT
D.GND 11
TP2 12
384FS
1ST ORDER NOISE SHAVER
1 BIT DAC
6 REF DC
5 SERVO DC
DATA(R) 13
BCK 14
SYS-CLK 15
WDCK 16
DATA(L) 17
NC 18
TP1 19
+VDD 20
INPUT INTERFACE CIRCUIT
REFERENCE & BIAS CIRCUIT
VCOM BUFFER
2 VCOM (L)
3 NC
10 BIT DAC
4 I-OUT(L)
DIGITAL OFFSET CIRCUIT
ANALOG CORRECTION CIRCUIT
1ST ORDER NOISE SHAVER
1 BIT DAC
384FS
1 +VCC

NJM2904M : IC203



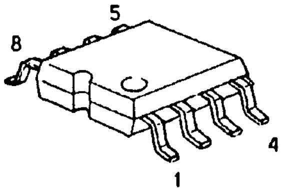

A OUT 1
A-IN 2
A+IN 3
V- 4
8 V+
7 B OUT
6 B-IN
5 B+IN
A
B

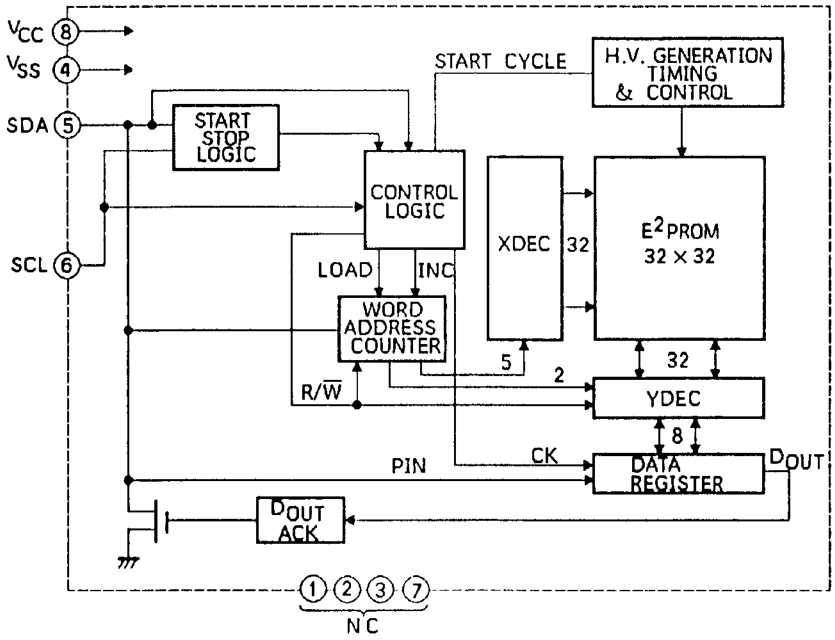
45552W02 : IC501


33
32
48
17
49
16
64
1

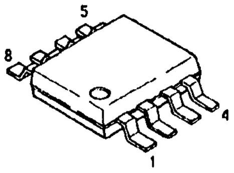
PIN NO.	CODE ADDRESS	I/O	PIN NO.	CODE ADDRESS	I/O	PIN NO.	CODE ADDRESS	I/O
1	SCL	I	23	$\overline{\text{D-OUT}}$	O	45	GND	—
2	SDA	I/O	24	GND	—	46	A·V_{SS}	—
3	NC	—	25	$\overline{\text{LMT-SW}}$	I	47	HI-TEMP	I
4	NC	—	26	LOCK	I	48	LO-TEMP	I
5	NC	—	27	BUS 0	I/O	49	DISC-P	I
6	NC	—	28	BUS 1	I/O	50	LOAD-P	I
7	NC	—	29	BUS 2	I/O	51	DISC-OK	I
8	NC	—	30	BUS 3	I/O	52	DISC-NO	I
9	GND	—	31	BUCK	O	53	GND	—
10	EJT-LED	O	32	$\overline{\text{CCE}}$	O	54	GND	—
11	NC	—	33	BUS-OUT	O	55	A·V_{DD}	—
12	A-MUTE	O	34	NC	—	56	A·V_{REF}	I
13	LOD M+	O	35	RESET	I	57	NC	—
14	LOD M-	O	36	BUS-IN	I	58	NC	—
15	ELV M+	O	37	BATT	I	59	NC	—
16	ELV M-	O	38	ACC	I	60	NC	—
17	V-CONT	O	39	$\overline{\text{EJT-KEY}}$	I	61	NC	—
18	F-CONT	O	40	V_{DD}	—	62	NC	—
19	$\overline{\text{LS-RST}}$	O	41	X2	—	63	NC	—
20	$\overline{\text{LOAD-SW}}$	I	42	X1	—	64	NC	—
21	$\overline{\text{HOME}}$	I	43	GND	—			
22	MAG-SW	I	44	NC	—			

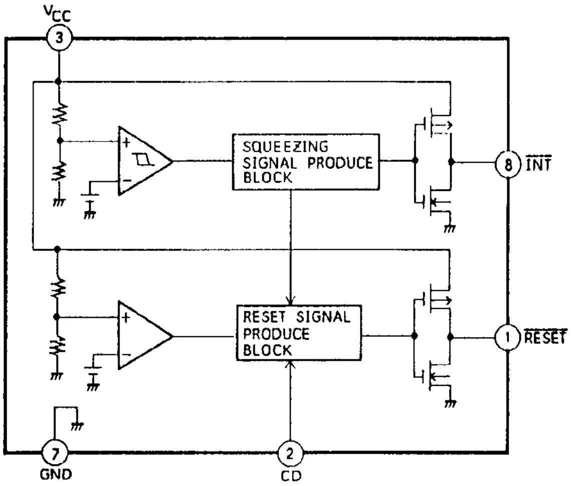
X24LC01SI : IC502



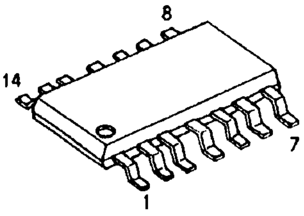

VCC 8
VSS 4
SDA 5
SCL 6
START STOP LOGIC
START CYCLE
H.V. GENERATION TIMING & CONTROL
CONTROL LOGIC
LOAD
INC
WORD ADDRESS COUNTER
R/W
XDEC
32
E2PROM 32 × 32
5
2
32
YDEC
8
CK
PIN
DATA REGISTER
DOUT
DOUT ACK
1 2 3 7
NC

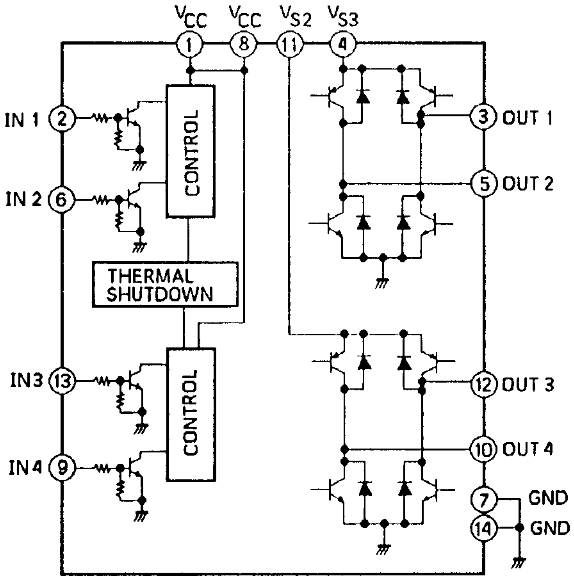
M62007FP : IC504



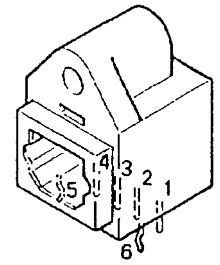

VCC
3
SQUEEZING SIGNAL PRODUCE BLOCK
8 INT
RESET SIGNAL PRODUCE BLOCK
1 RESET
7 GND
2 CD

LB1836M : IC507




VCC 1
VCC 8
VS2 11
VS3 4
IN 1 2
IN 2 6
CONTROL
THERMAL SHUTDOWN
IN3 13
IN4 9
CONTROL
3 OUT 1
5 OUT 2
12 OUT 3
10 OUT 4
7 GND
14 GND

TOTX193K : IC701



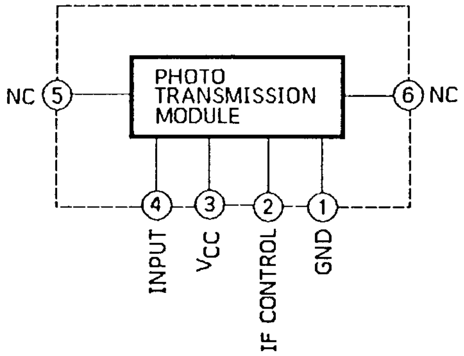
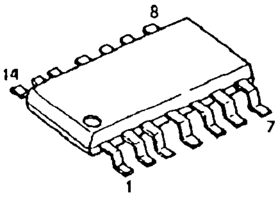
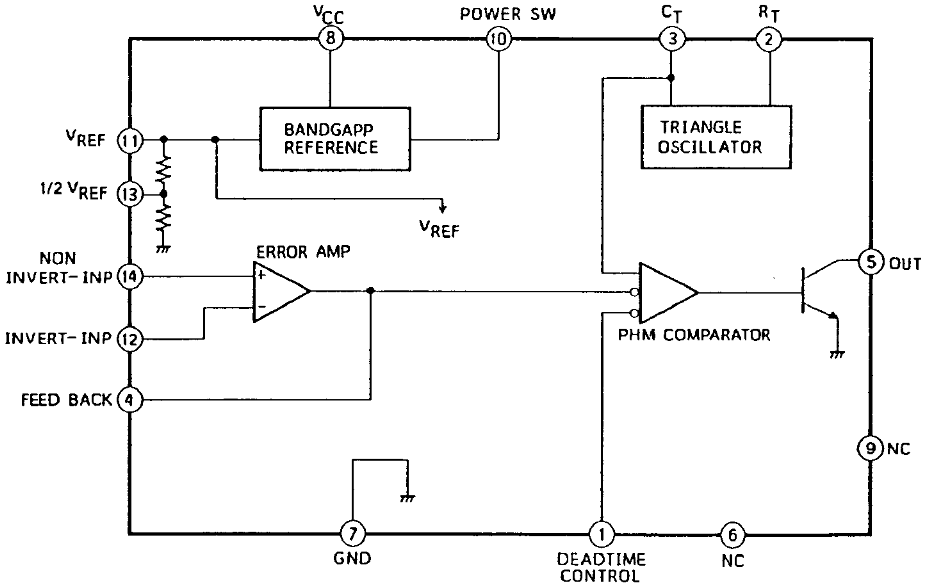


PHOTO TRANSMISSION MODULE
NC 5
6 NC
4 INPUT
3 V_{CC}
2 IF CONTROL
1 GND

BA9700AF : IC801



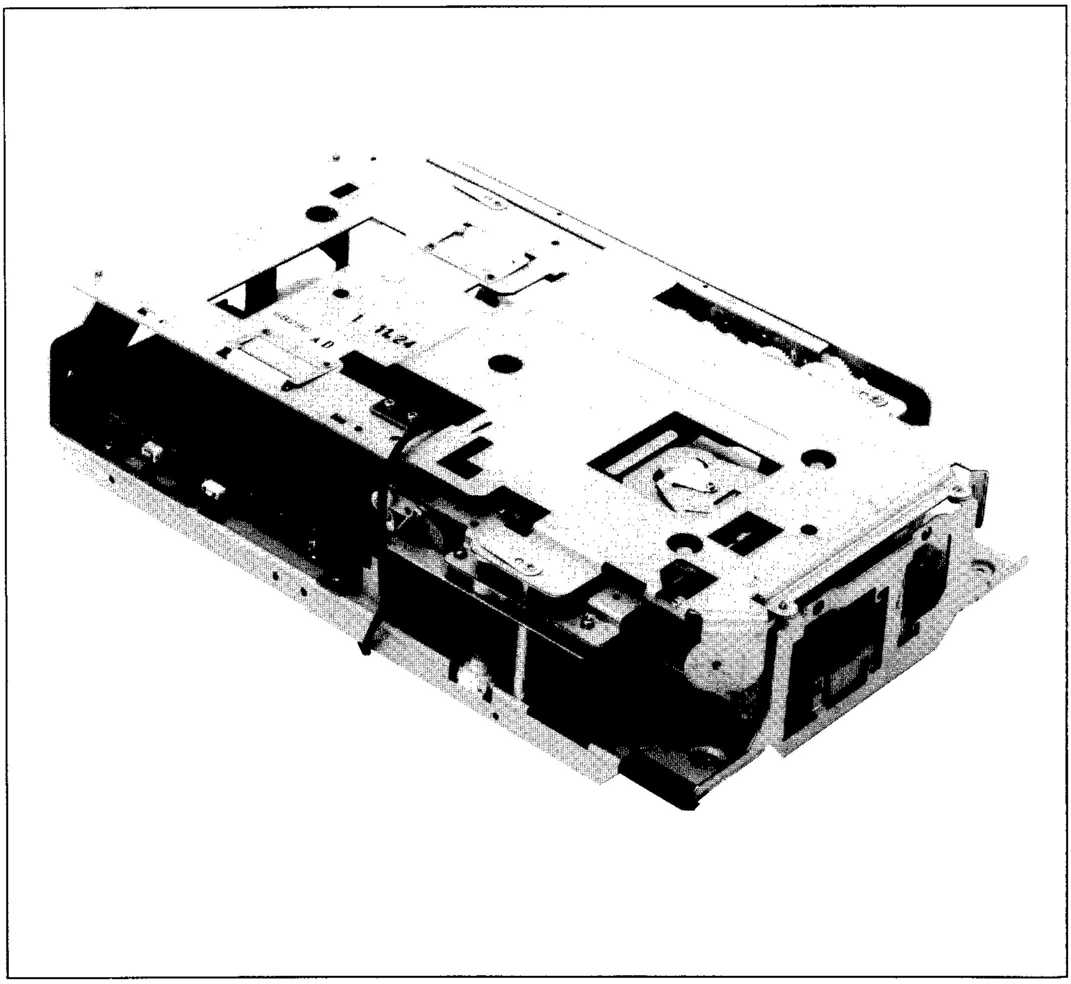

V_{CC} 8
POWER SW 10
C_T 3
R_T 2
V_{REF} 11
1/2 V_{REF} 13
BANDGAPP REFERENCE
TRIANGLE OSCILLATOR
V_{REF}
NON INVERT-INP 14
INVERT-INP 12
FEED BACK 4
ERROR AMP
+
-
PHM COMPARATOR
5 OUT
9 NC
7 GND
1 DEADTIME CONTROL
6 NC

ALPINE®

SERVICE MANUAL

CD Remote Changer Mechanism
CD Shuttle

ADDENDUM & REVISED (II)



DR SERIES

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Disassembly Instructions

<DR24A010 Model Only>

1. **Removal of Pick-up Unit**
   (1)Remove three screws marked "O" as shown in Figure 1.
2. **Removal of Sled Motor**
   (1) After removal of the pick-up unit, remove the motor bracket with sled motor by removing the solder (A) and two screws marked "X" as shown in Figure 1.
   (2) Remove the solder (B) and a screw marked "□" as shown in Figure 1.
3. **Removal of Head Unit**
   (1) After removal of the motor bracket, remove the shaft bracket and the screw bracket by removing two screws marked "Δ" as shown in Figure 1.

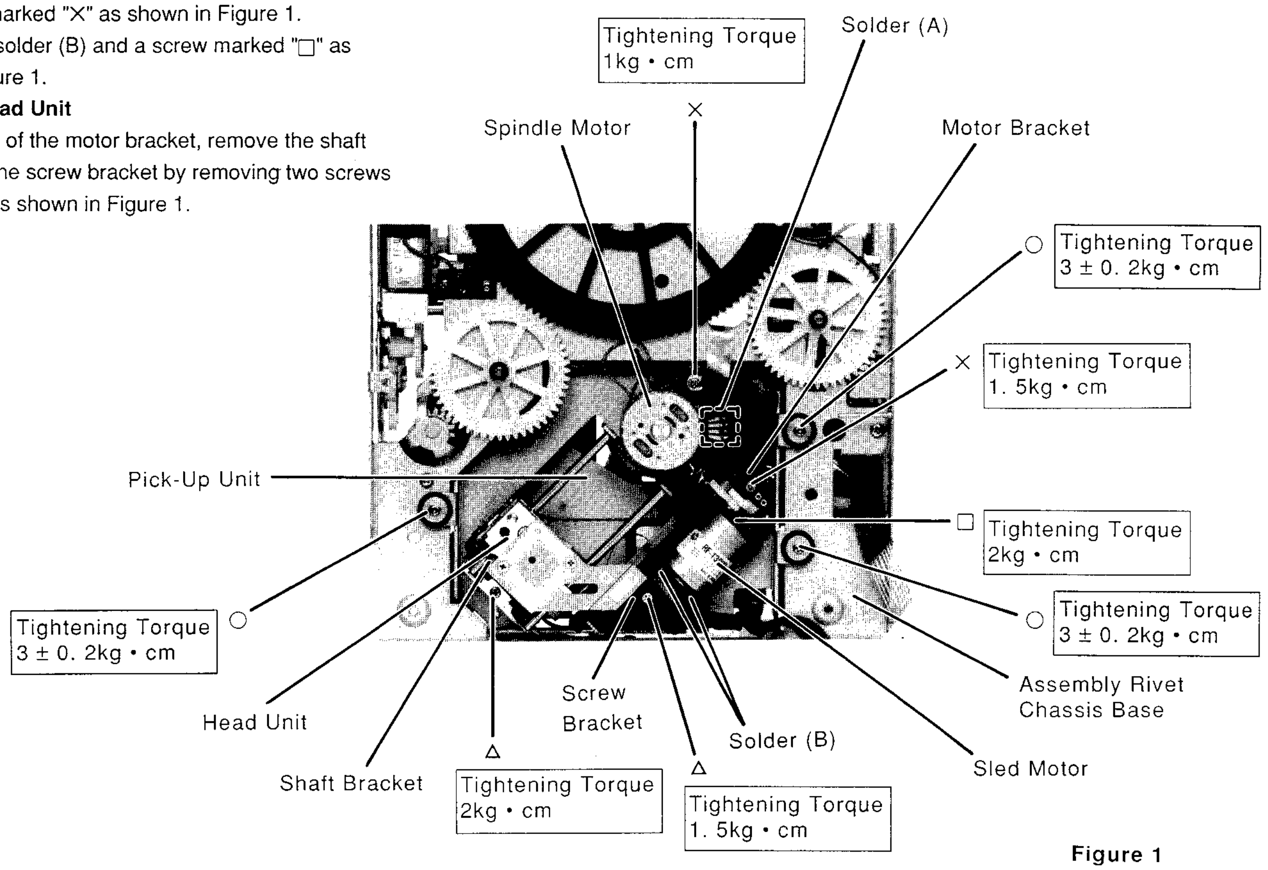
Tightening Torque 1kg • cm
Solder (A)
×
Spindle Motor
Motor Bracket
○ Tightening Torque 3 ± 0. 2kg • cm
× Tightening Torque 1. 5kg • cm
Pick-Up Unit
□ Tightening Torque 2kg • cm
Tightening Torque 3 ± 0. 2kg • cm ○
○ Tightening Torque 3 ± 0. 2kg • cm
Assembly Rivet Chassis Base
Head Unit
Screw Bracket
Solder (B)
Sled Motor
Shaft Bracket
Δ Tightening Torque 2kg • cm
Δ Tightening Torque 1. 5kg • cm

Figure 1

4. **Removal of LED P. C. Board**
   (1) Remove two screws marked "●" as shown in Figure 2.
5. **Removal of Switch P.C. Board**
   (1) Remove a screw marked "▲" as shown in Figure 2.
   (2) Remove the hook (A) as shown in Figure 2.

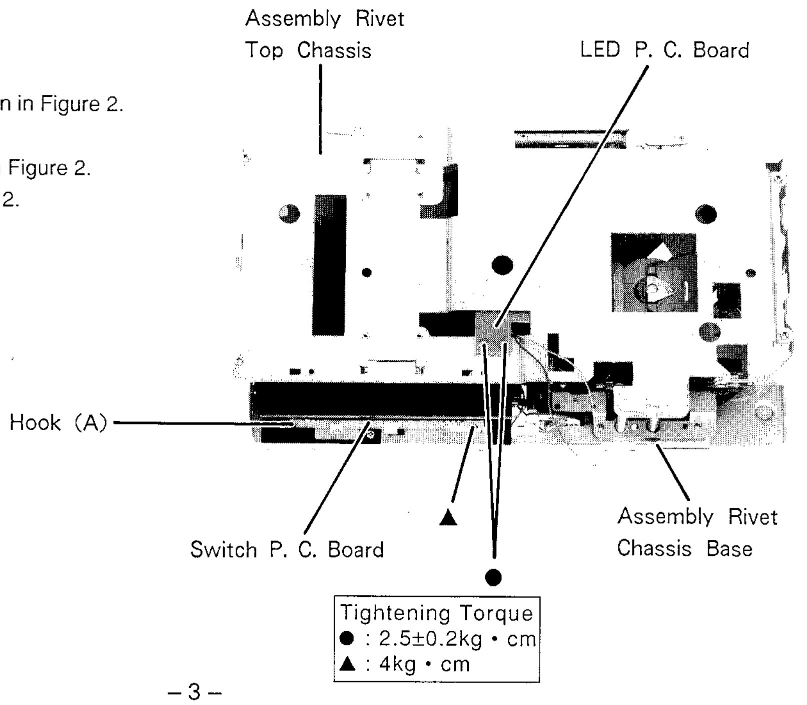
Assembly Rivet Top Chassis
LED P. C. Board
Hook (A)
Switch P. C. Board
▲
●
Assembly Rivet Chassis Base
Tightening Torque
● : 2.5±0.2kg • cm
▲ : 4kg • cm

Figure 2

6. **Removal of Assembly Rivet Chassis CR**
   (1) After Remove seven screws marked "∞", remove the Assembly Rivet Top Chassis and the Assembly Rivet Chassis Base as shown in Figure 3.
7. **Removal of Photo P. C. Board**
   (1) After picking up the Assembly Rivet Chassis CR, remove the solder (C) as shown in Figure 4.
   (2) Remove a screw marked "■" as shown in Figure 4.

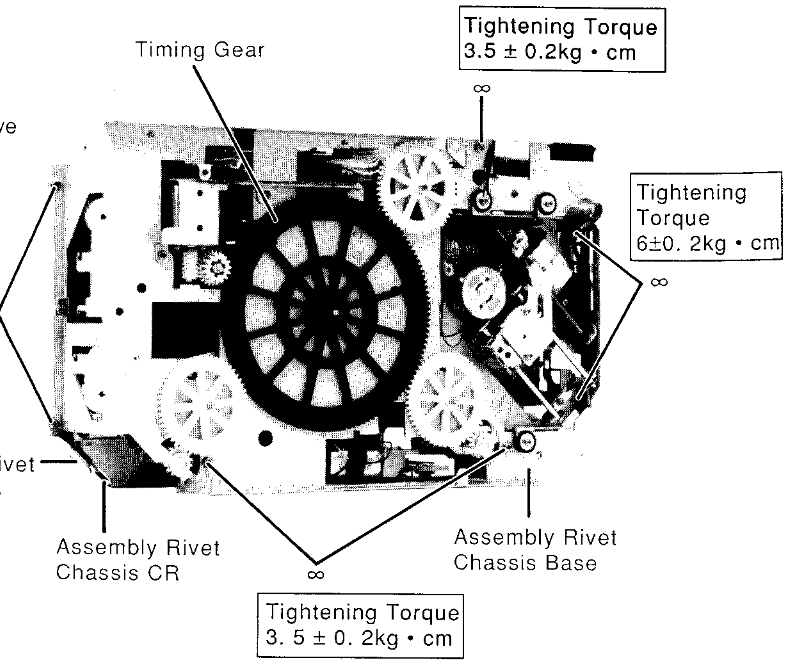
Timing Gear
Tightening Torque 3.5 ± 0.2kg • cm
∞
Tightening Torque 6±0. 2kg • cm
∞
Tightening Torque 6 ± 0. 2kg • cm ∞
Assembly Rivet Top Chassis
Assembly Rivet Chassis CR
Assembly Rivet Chassis Base
∞
Tightening Torque 3. 5 ± 0. 2kg • cm

Figure 3

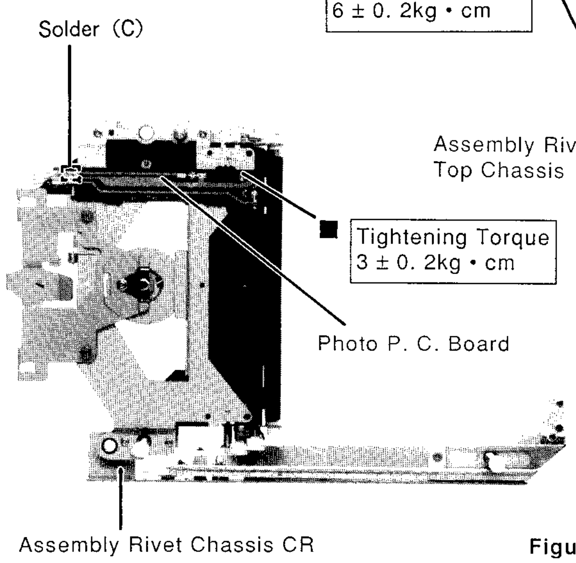
Solder (C)
■ Tightening Torque 3 ± 0. 2kg • cm
Photo P. C. Board
Assembly Rivet Chassis CR

Figure 4

8. **Removal of Sensor P. C. Board**
   (1) After removal of the Assembly Rivet Chassis CR, remove the solder (D) and (E) as shown in Figure 5.
   (2) Remove two screws marked "☆" as shown in Figure 5.
9. **Removal of Loading Motor**
   (1) After removal of the Assembly Rivet Chassis CR, remove the solder (E) as shown in Figure 5.
   (2) Remove two screws marked "★" as shown in Figure 5.

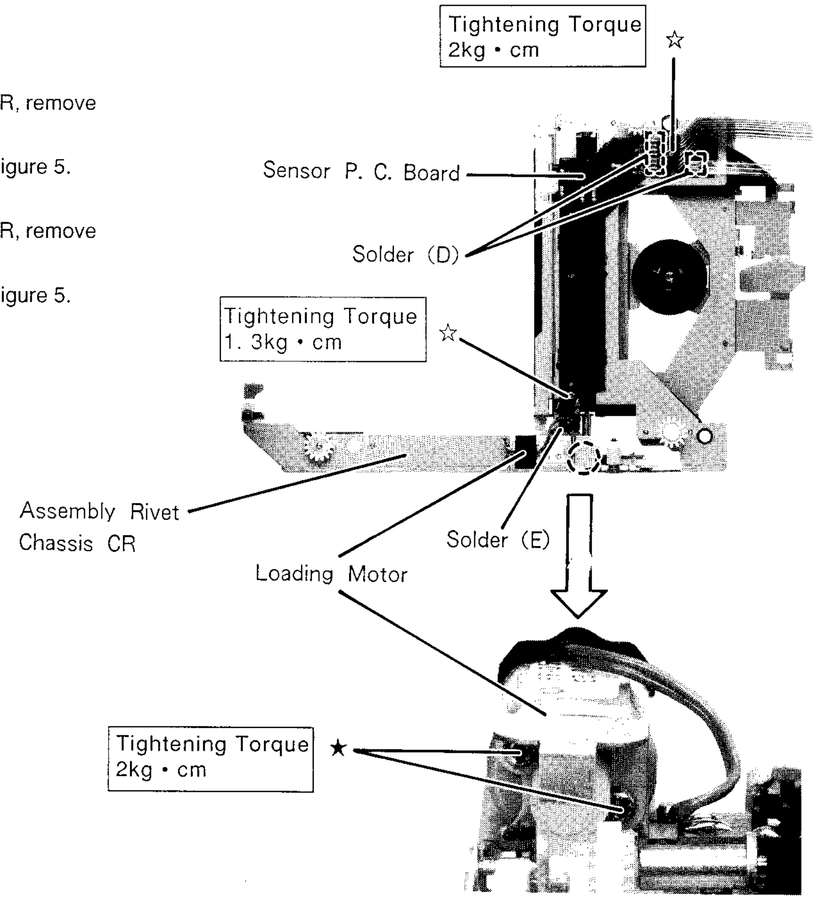
Tightening Torque 2kg • cm ☆
Sensor P. C. Board
Solder (D)
Tightening Torque 1. 3kg • cm ☆
Assembly Rivet Chassis CR
Solder (E)
Loading Motor
Tightening Torque 2kg • cm ★

Figure 5

10. Remo
(1) Afte
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Fig
(2) Re
two
(3) Re
(4) Re
11. Remo
(1) Afte
rem
(2) Re

In

12. Remo
(1) Afte
the
scr
(2) Re

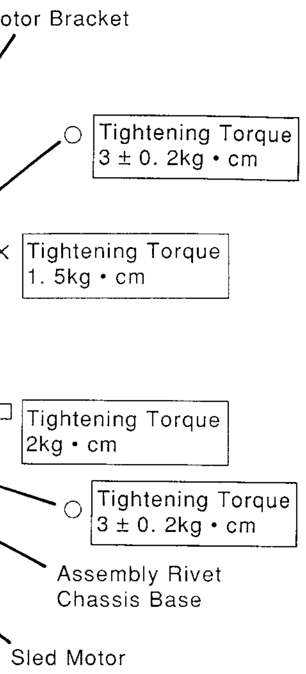

otor Bracket
○ Tightening Torque 3 ± 0. 2kg • cm
Tightening Torque 1. 5kg • cm
Tightening Torque 2kg • cm
○ Tightening Torque 3 ± 0. 2kg • cm
Assembly Rivet Chassis Base
Sled Motor

Figure 1

Board
y Rivet
Base

Figure 2

6. Removal of Assembly Rivet Chassis CR

(1) After Remove seven screws marked "∞", remove the Assembly Rivet Top Chassis and the Assembly Rivet Chassis Base as shown in Figure 3.

7. Removal of Photo P. C. Board

(1) After picking up the Assembly Rivet Chassis CR, remove the solder (C) as shown in Figure 4.

(2) Remove a screw marked "■" as shown in Figure 4.

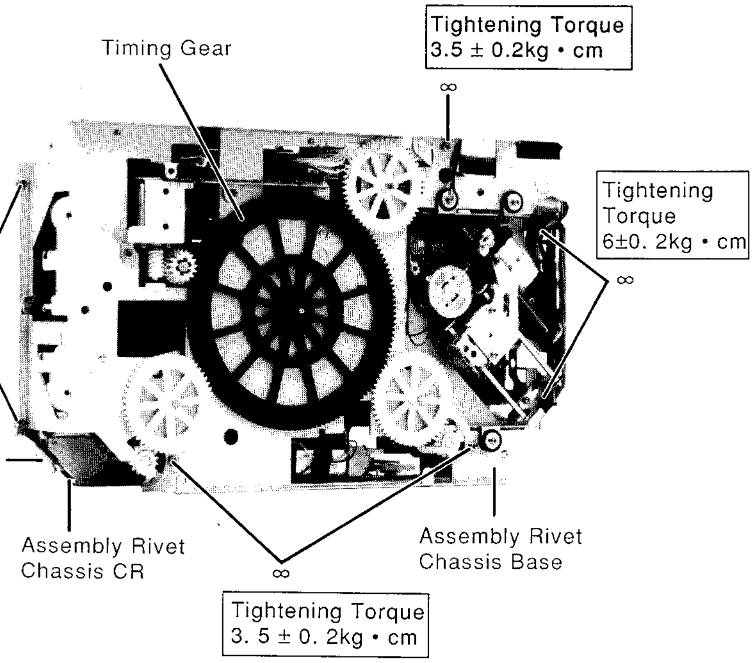

Timing Gear
Tightening Torque 3.5 ± 0.2kg • cm
∞
Tightening Torque 6±0. 2kg • cm
∞
Tightening Torque 6 ± 0. 2kg • cm
∞
Assembly Rivet Top Chassis
Assembly Rivet Chassis CR
Assembly Rivet Chassis Base
∞
Tightening Torque 3. 5 ± 0. 2kg • cm

Figure 3

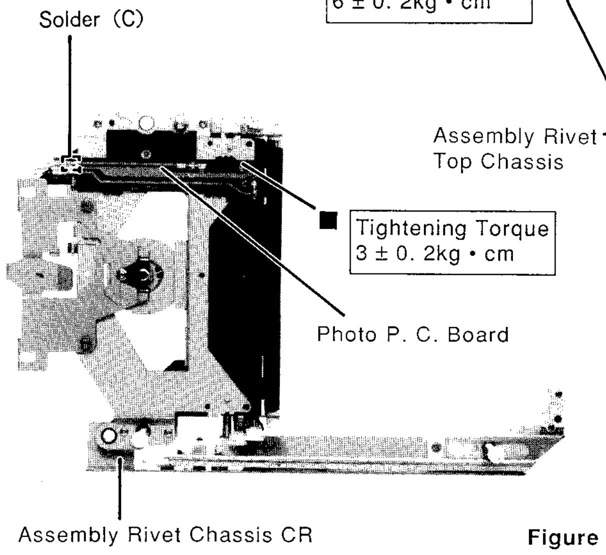

Solder (C)
■ Tightening Torque 3 ± 0. 2kg • cm
Photo P. C. Board
Assembly Rivet Chassis CR

Figure 4

8. Removal of Sensor P. C. Board

(1) After removal of the Assembly Rivet Chassis CR, remove the solder (D) and (E) as shown in Figure 5.

(2) Remove two screws marked "☆" as shown in Figure 5.

9. Removal of Loading Motor

(1) After removal of the Assembly Rivet Chassis CR, remove the solder (E) as shown in Figure 5.

(2) Remove two screws marked "★" as shown in Figure 5.

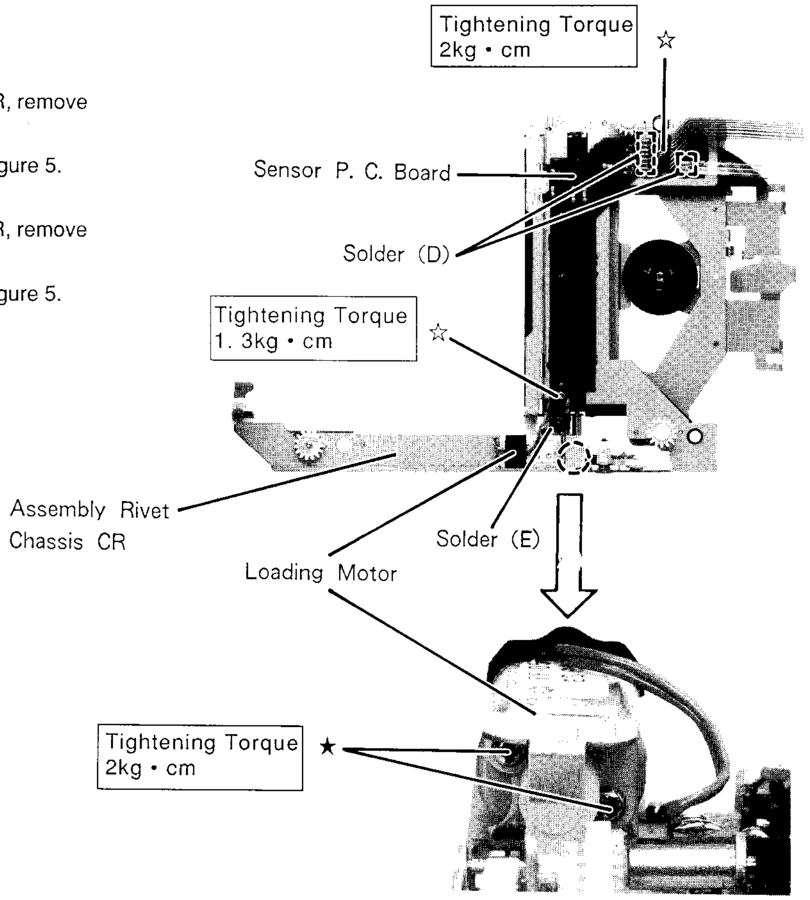

Tightening Torque 2kg • cm
☆
Sensor P. C. Board
Solder (D)
Tightening Torque 1. 3kg • cm
☆
Assembly Rivet Chassis CR
Solder (E)
Loading Motor
Tightening Torque 2kg • cm
★

Figure 5

10. Removal of Elevator Motor

(1) After removal of the Assembly Rivet Chassis CR, remove the timing gear by removing the washer (A) as shown in Figure 6.

(2) Remove the Assembly Rivet Bracket Motor by removing two screws marked "◇" as shown in Figure 6.

(3) Remove the solder (F) as shown in Figure 7.

(4) Remove tow screws marked "◆" as shown in Figure 6.

11. Removal of Interrupt P. C. Board

(1) After removal of the Assembly Rivet Bracket Motor, remove the solder (F) as shown in Figure 7.

(2) Remove two screws marked "#" as shown in Figure 7.

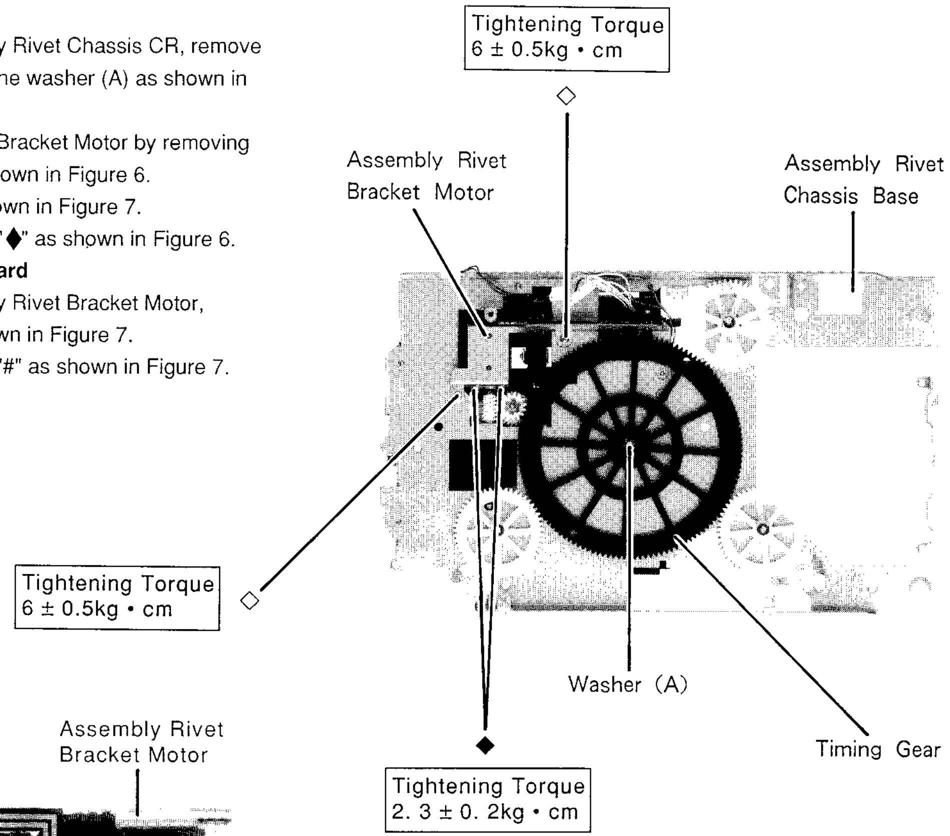

Tightening Torque 6 ± 0.5kg • cm
◇
Assembly Rivet Bracket Motor
Assembly Rivet Chassis Base
Tightening Torque 6 ± 0.5kg • cm
◇
Washer (A)
Timing Gear
◆
Tightening Torque 2. 3 ± 0. 2kg • cm

Figure 6

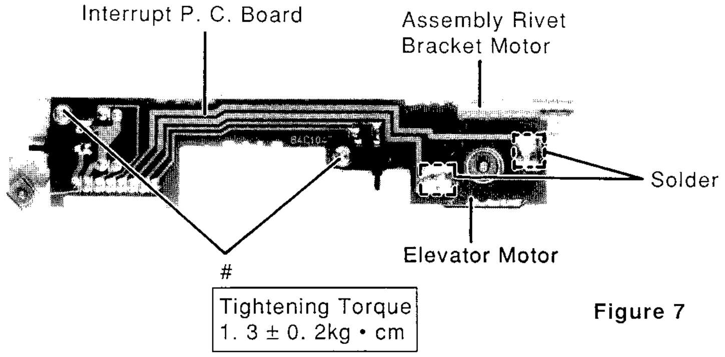

Interrupt P. C. Board
Assembly Rivet Bracket Motor
Solder (F)
Elevator Motor
#
Tightening Torque 1. 3 ± 0. 2kg • cm

Figure 7

12. Removal of Magazine Photo P. C. Board

(1) After removal of the Assembly Rivet Chassis CR, remove the Assembly Rivet Chassis Magazine by removing three screws marked "❊" as shown in Figure 8.

(2) Remove two screws marked "◎" as shown in Figure 8.

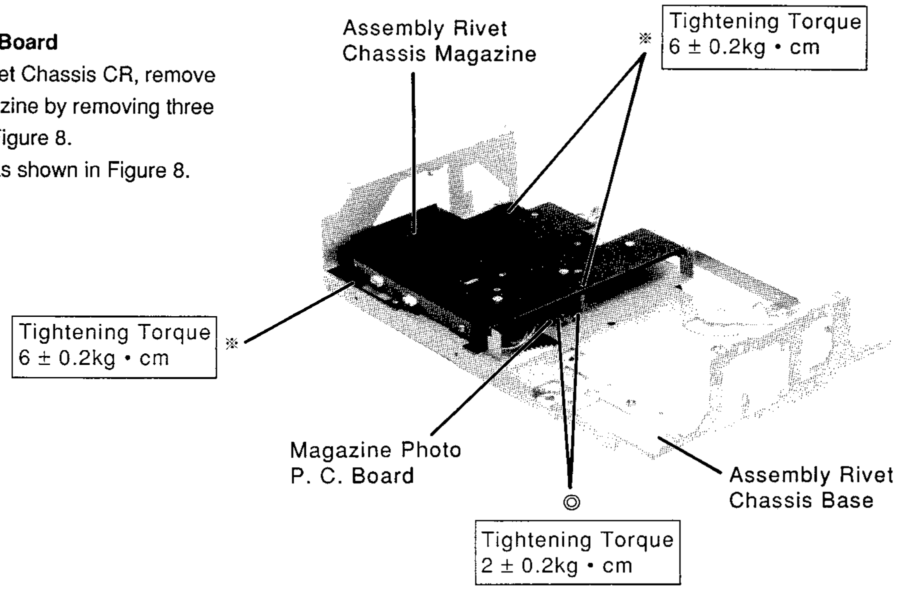

Assembly Rivet Chassis Magazine
❊ Tightening Torque 6 ± 0.2kg • cm
Tightening Torque 6 ± 0.2kg • cm ❊
Magazine Photo P. C. Board
◎
Tightening Torque 2 ± 0.2kg • cm
Assembly Rivet Chassis Base

Figure 8

Disassembly Instructions

<DR24A020/02A/030/040 Model Only>

1. **Removal of Pick-Up Unit**
   (1) Remove three screws marked "O" as shown in Figure 9.
2. **Removal of Sled Motor**
   (1) After removal of the pick-up unit, remove the motor bracket with sled motor by removing the solder (A) and two screws marked "X" as shown in Figure 9.
   (2) Remove the solder (B) and a screw marked "□" as shown in Figure 9.
3. **Removal of Head Unit <DR24A020 Model Only>**
   (1) After removal of the motor bracket, remove the shaft bracket and the screw bracket by removing two screws marked "△" as shown in Figure 9.

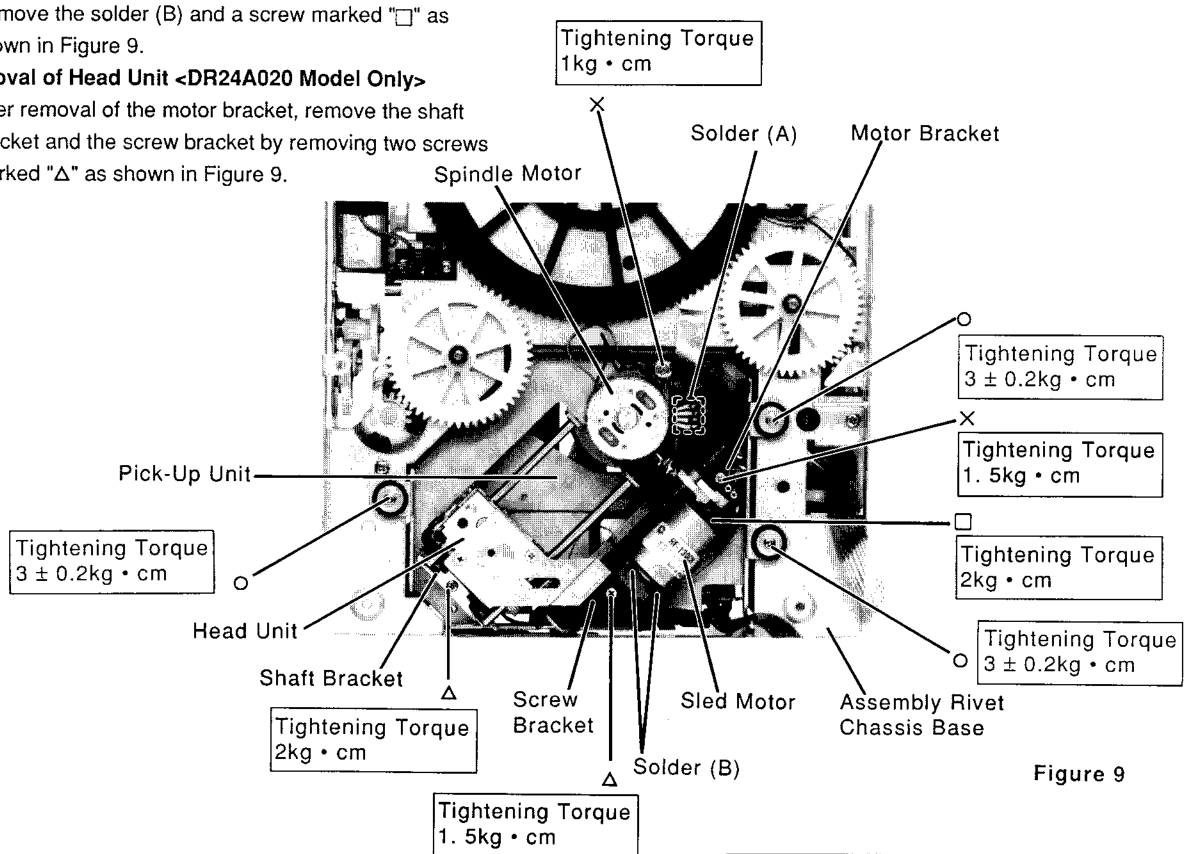

Tightening Torque
1kg • cm
×
Solder (A)
Motor Bracket
Spindle Motor
O
Tightening Torque
3 ± 0.2kg • cm
×
Tightening Torque
1. 5kg • cm
□
Tightening Torque
2kg • cm
Pick-Up Unit
Tightening Torque
3 ± 0.2kg • cm
O
Head Unit
Tightening Torque
3 ± 0.2kg • cm
O
Shaft Bracket
△
Tightening Torque
2kg • cm
Screw
Bracket
Sled Motor
Assembly Rivet
Chassis Base
△
Solder (B)
Tightening Torque
1. 5kg • cm

Figure 9

3. **Removal of Head Unit <DR24A02A/030/040 Model Only>**
   (1) After removal of the motor bracket remove the screw bracket by removing a screw marked "◉" as shown in Figure 10.
   (2) Remove four screws marked "⊗" and four shaft Stoppers as shown in Figure 10.

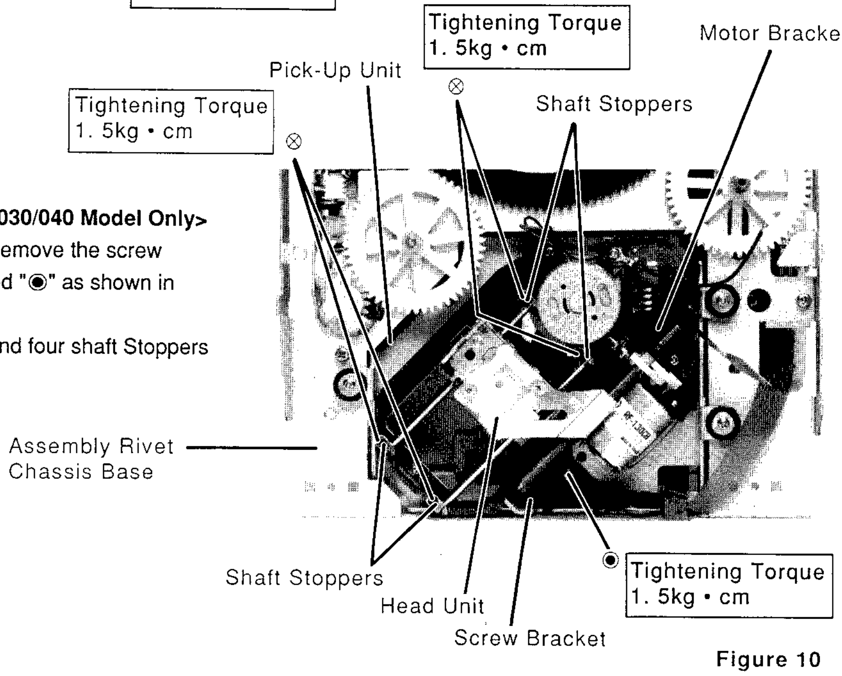

Tightening Torque
1. 5kg • cm
⊗
Motor Bracket
Pick-Up Unit
Shaft Stoppers
Tightening Torque
1. 5kg • cm
⊗
Assembly Rivet
Chassis Base
Shaft Stoppers
Head Unit
Screw Bracket
◉
Tightening Torque
1. 5kg • cm

Figure 10

4. **Removal of Magazine Photo**
   (1) Remove a screw marked "●" as shown in Figure 11.
5. **Removal of Switch P. C. Board**
   (1) Remove a screw marked "▲" as shown in Figure 11.
   (2) Remove the Hook (A) as shown in Figure 11.

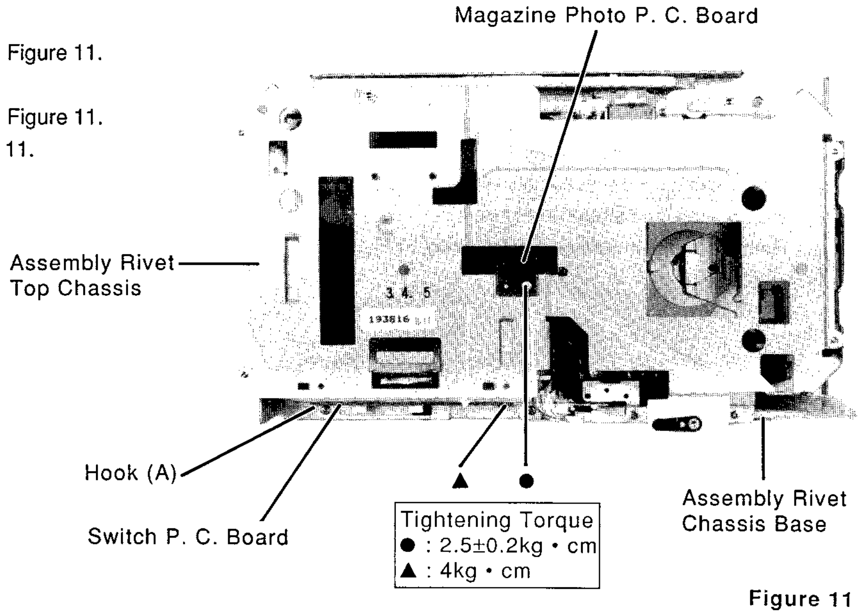

Magazine Photo P. C. Board
Assembly Rivet
Top Chassis
Hook (A)
Switch P. C. Board
▲
●
Tightening Torque
● : 2.5±0.2kg • cm
▲ : 4kg • cm
Assembly Rivet
Chassis Base

Figure 11

6. **Removal of Assembly Rivet Chassis CR**
   (1) After remove seven screws marked "∞", remove the Assembly Rivet Top Chassis and the Assembly Rivet Chassis Base as shown in Figure 12.
7. **Removal of LED P. C. Board**
   (1) After picking up the Assembly Rivet Chassis CR, remove the solder (C) as shown in Figure 13.
   (2) Remove a screw marked "■" as shown in Figure 13.

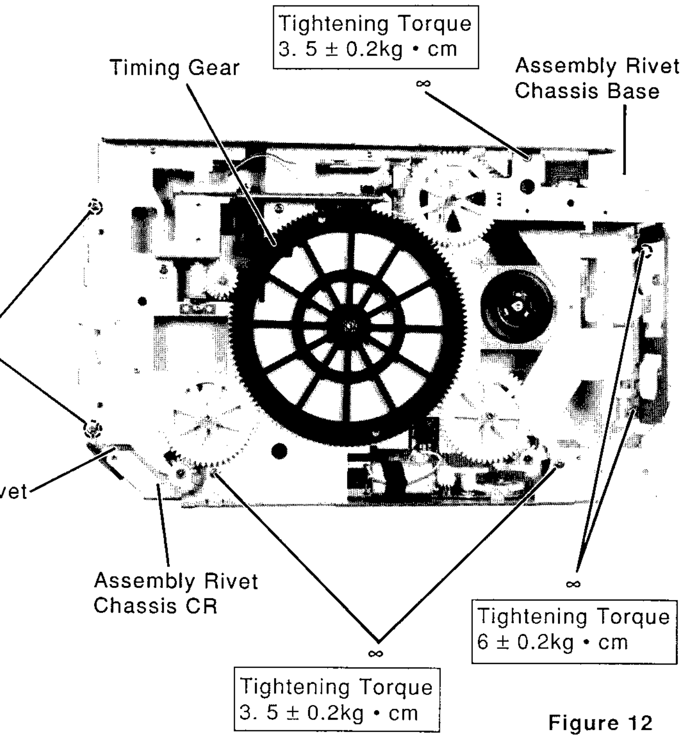

Tightening Torque
3. 5 ± 0.2kg • cm
Timing Gear
∞
Assembly Rivet
Chassis Base
Tightening Torque
6 ± 0.2kg • cm
∞
Assembly Rivet
Top Chassis
Assembly Rivet
Chassis CR
∞
∞
Tightening Torque
6 ± 0.2kg • cm
Tightening Torque
3. 5 ± 0.2kg • cm

Figure 12

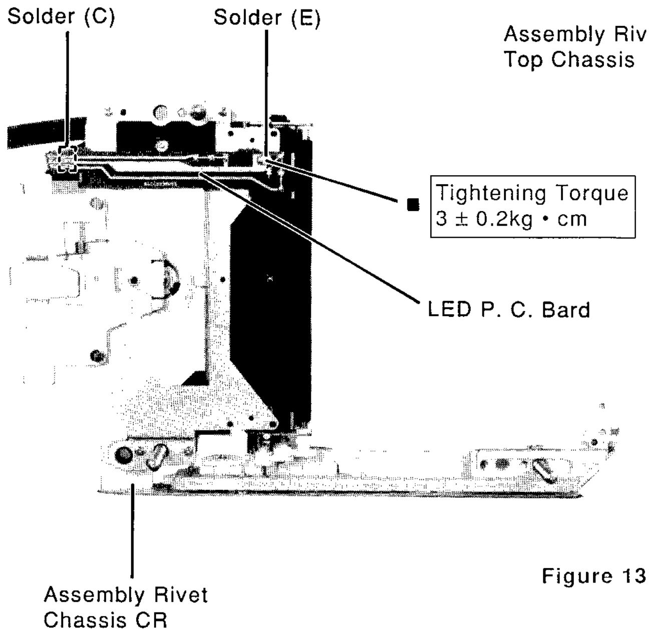

Solder (C)
Solder (E)
■
Tightening Torque
3 ± 0.2kg • cm
LED P. C. Bard
Assembly Rivet
Chassis CR

Figure 13

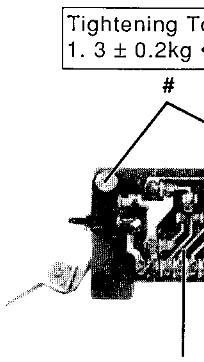
8. **Removal**
   (1) After rer
   the sold
   (2) Remove
   "☆" as s

Note: When re
damage

9. **Removal**
   (1) After rer
   the sold
   (2) Remove

10. **Removal**
   (1) After rer
   the timir
   Figure 1
   (1) After rer
   the timir
   Figure 1
   (2) Remove
   two scre
   (3) Remove
   (4) Remove

11. **Removal**
   (1) After rer
   remove
   (2) Remove


Tightening T
1. 3 ± 0.2kg
#
Interrupt P. C.

ning Torque
2kg • cm

ning Torque
• cm

ning Torque
cm

tening Torque
).2kg • cm

Figure 9

otor Bracket

ng Torque
cm

igure 10

4. Removal of Magazine Photo

(1) Remove a screw marked "●" as shown in Figure 11.

5. Removal of Switch P. C. Board

(1) Remove a screw marked "▲" as shown in Figure 11.

(2) Remove the Hook (A) as shown in Figure 11.

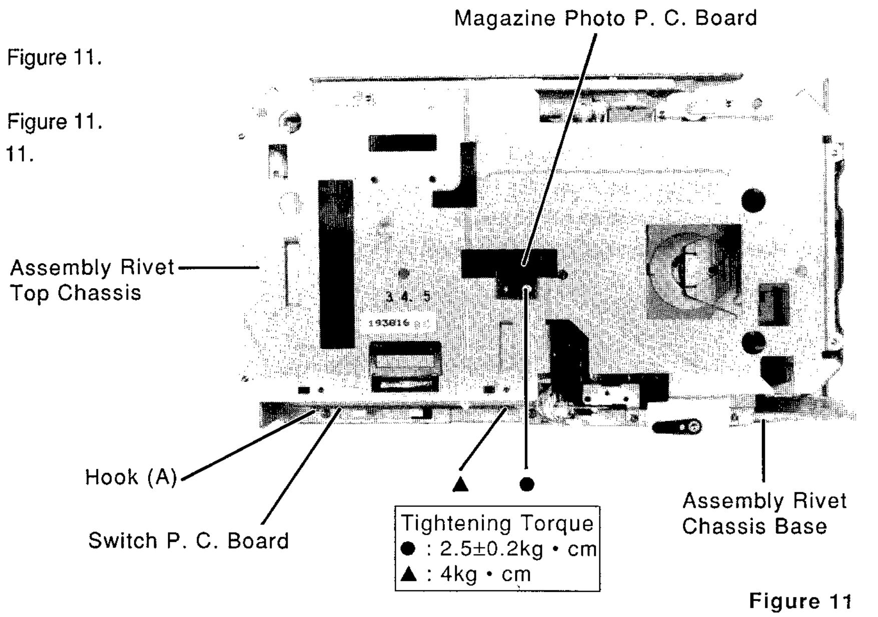

Magazine Photo P. C. Board
Assembly Rivet Top Chassis
Hook (A)
Switch P. C. Board
▲ ●
Tightening Torque
● : 2.5±0.2kg • cm
▲ : 4kg • cm
Assembly Rivet Chassis Base

Figure 11

6. Removal of Assembly Rivet Chassis CR

(1) After remove seven screws marked "∞", remove the Assembly Rivet Top Chassis and the Assembly Rivet Chassis Base as shown in Figure 12.

7. Removal of LED P. C. Board

(1) After picking up the Assembly Rivet Chassis CR, remove the solder (C) as shown in Figure 13.

(2) Remove a screw marked "■" as shown in Figure 13.

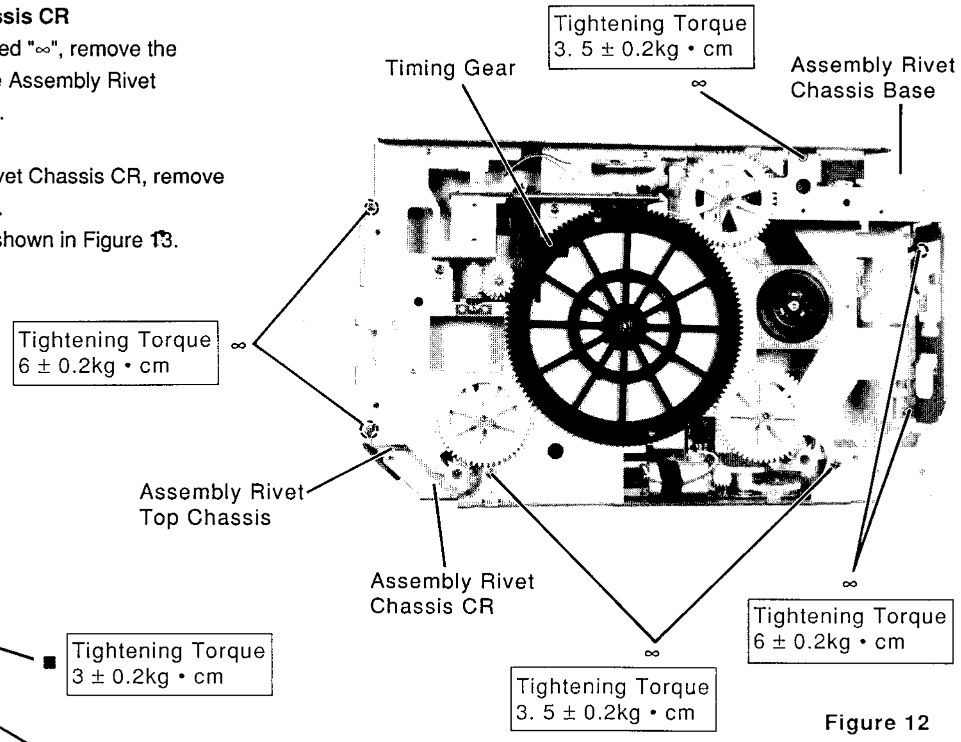

Timing Gear
Tightening Torque
3. 5 ± 0.2kg • cm
∞
Assembly Rivet Chassis Base
Tightening Torque
6 ± 0.2kg • cm
∞
Assembly Rivet Top Chassis
Assembly Rivet Chassis CR
∞
Tightening Torque
3. 5 ± 0.2kg • cm
∞
Tightening Torque
6 ± 0.2kg • cm

Figure 12

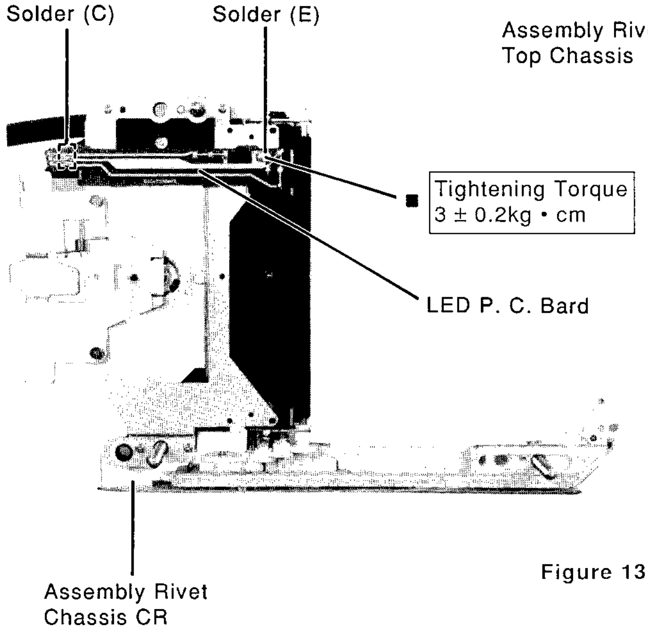

Solder (C)
Solder (E)
■
Tightening Torque
3 ± 0.2kg • cm
LED P. C. Bard
Assembly Rivet Chassis CR

Figure 13

8. Removal of Sensor P. C. Board

(1) After removal of the Assembly Rivet Chassis CR, remove the solder (E) and (F) as shown in Figure 14.

(2) Remove Elevator Screw Shaft and two screws marked "☆" as shown in Figure 14.

Note: When removing the sensor P. C. Board, be careful not to damage the Photo-Transistor.

9. Removal of Loading Motor

(1) After removal of the Assembly Rivet Chassis CR, remove the solder (F) as shown in Figure 14.

(2) Remove two screws marked "★" as shown in Figure 14.

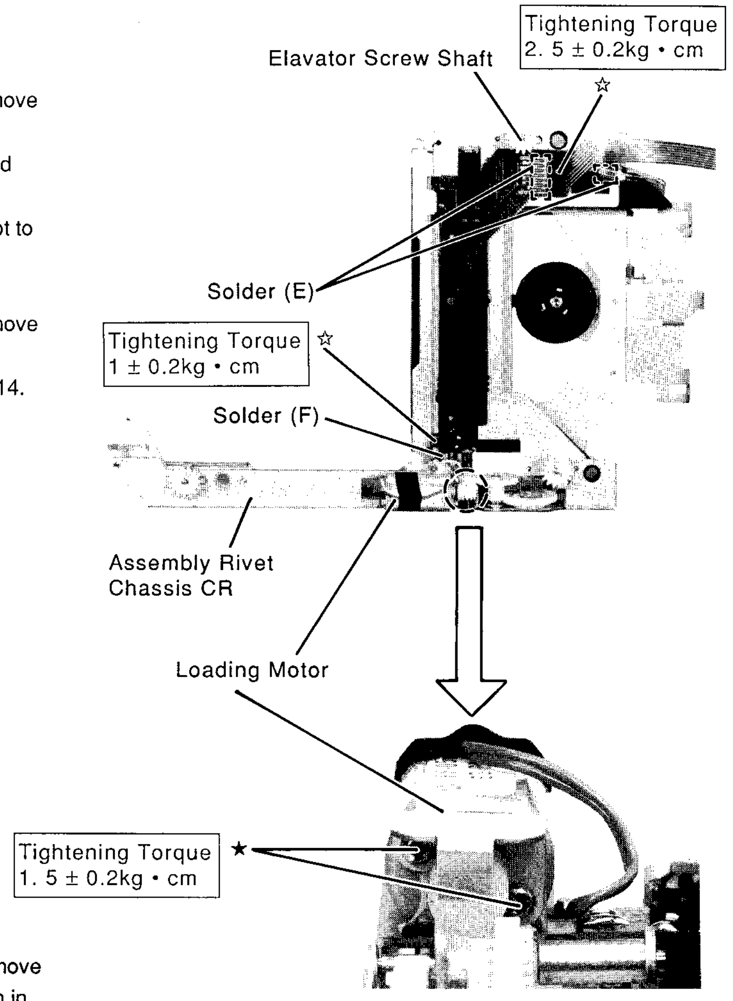

Tightening Torque
2. 5 ± 0.2kg • cm
☆
Elavator Screw Shaft
Solder (E)
Tightening Torque
1 ± 0.2kg • cm
☆
Solder (F)
Assembly Rivet Chassis CR
Loading Motor
Tightening Torque
1. 5 ± 0.2kg • cm
★

Figure 14

10. Removal of Elevator Motor

(1) After removal of the Assembly Rivet Chassis CR, remove the timing gear by removing the washer (A) as shown in Figure 15. **<DR24A020/02A Model Only>**

(1) After removal of the Assembly Rivet Chassis CR, remove the timing gear by removing the Ring "E" as shown in Figure 15. **<DR24A030/040 Model Only>**

(2) Remove the Assembly Rivet Bracket Motor by removing two screws marked "◇" as shown in Figure 15.

(3) Remove the solder (G) as shown in Figure 16.

(4) Remove two screws marked "◆" as shown in Figure 15.

11. Removal of Interrupt P. C. Board

(1) After removal of the Assembly Rivet Bracket Motor, remove the solder (G) as shown in Figure 16.

(2) Remove two screws marked "#" as shown in Figure16.

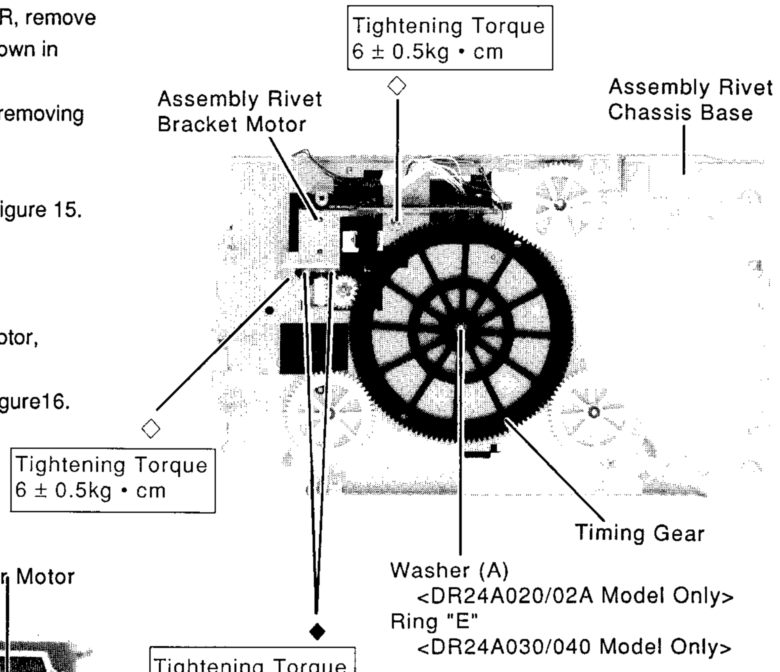

Tightening Torque
6 ± 0.5kg • cm
◇
Assembly Rivet Bracket Motor
Assembly Rivet Chassis Base
◇
Tightening Torque
6 ± 0.5kg • cm
Timing Gear
Washer (A)
<DR24A020/02A Model Only>
Ring "E"
<DR24A030/040 Model Only>
◆
Tightening Torque
2. 3 ± 0.2kg • cm

Figure 15

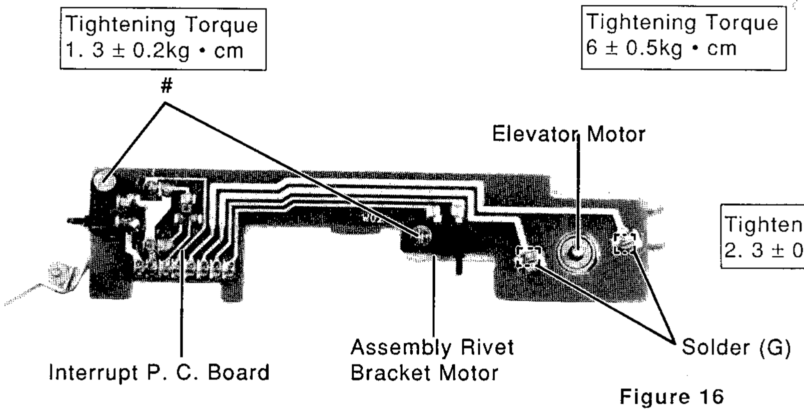

Tightening Torque
1. 3 ± 0.2kg • cm
#
Elevator Motor
Interrupt P. C. Board
Assembly Rivet Bracket Motor
Solder (G)

Figure 16

12. Removal of Magazine LED P. C. Board

(1) After removal of the Assembly Rivet Chassis CR, remove the Assembly Rivet Chassis Magazine by removing three screws marked "※" and the Hook (B) as shown in Figure 17.

(2) Remove a screw marked "◎" as shown in Figure 17.

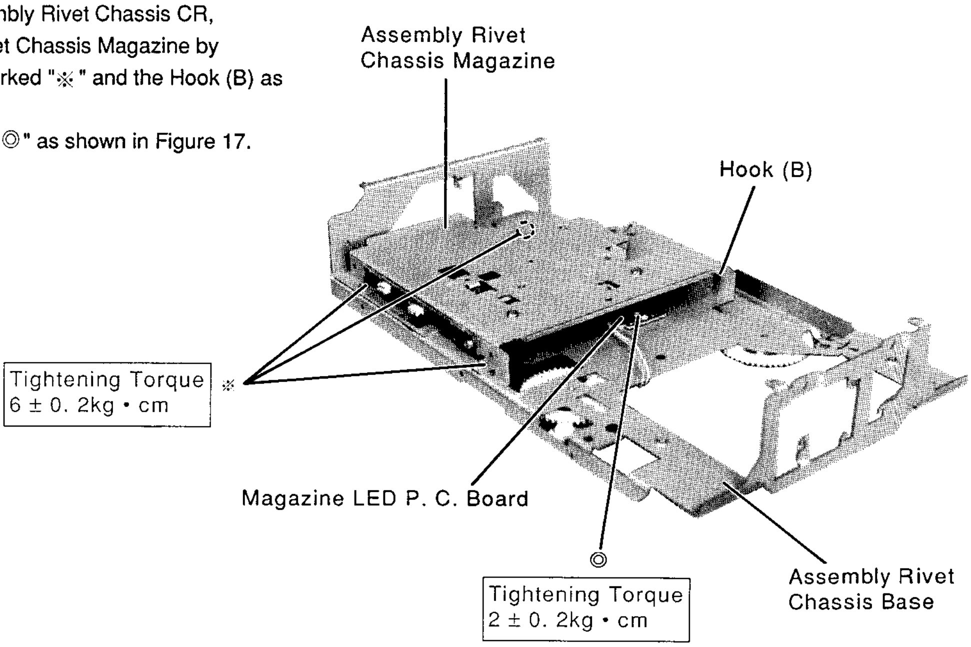

Assembly Rivet
Chassis Magazine
Hook (B)
Tightening Torque
6 ± 0. 2kg • cm
※
Magazine LED P. C. Board
◎
Tightening Torque
2 ± 0. 2kg • cm
Assembly Rivet
Chassis Base

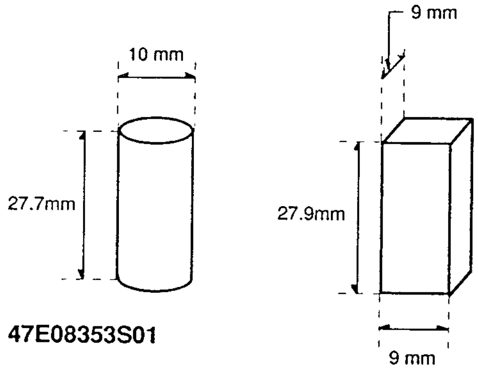
Figure 17

Adjusting method for Elevator Height

1. Remove two lock washers and a ring "E", than remove three gears (D).
2. Turn three gears (E) and move the CR chassis to F direction (to the position of CD magazine).
3. Insert the adjustment jig (☆) as shown in Figure 18 between the chassis and the CR chassis as shown in Figure 19.
   - ★ At the same time, insert the adjustment jig near each of three gears (E).
4. Adjust each of gears (E) to minimum gap and to getting smooth moving of each adjustment jig.
5. Adjust the H hole of timing gear to fit with the hole of chassis.
6. Mount three gears (D).
   - ★ At this time, pay attention that the position between the gear (E) adjusted and Timing gear does not make gap.
7. Fix three gears (D) with two lock washers and a ring "E".

(☆) : 47E08353S01 (DR24A010 Model Only)
01V00346S01 (DR24A020/02A/030/040 Model Only)

Adjustment Jig


10 mm
27.7mm
9 mm
27.9mm
9 mm

47E08353S01

01V00346S01
(Three pieces are supplied.)

Figure 18

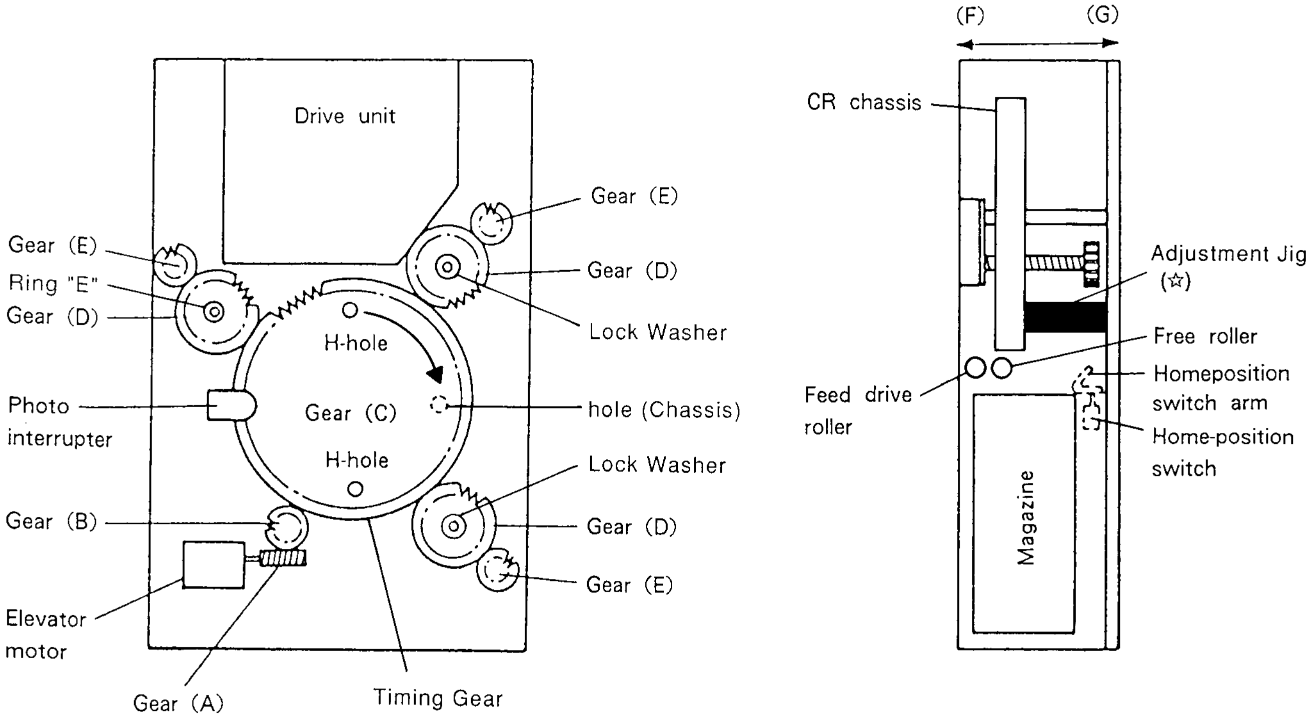

Drive unit
Gear (E)
Gear (E)
Ring "E"
Gear (D)
Gear (D)
Lock Washer
H-hole
Photo interrupter
Gear (C)
hole (Chassis)
H-hole
Lock Washer
Gear (B)
Gear (D)
Gear (E)
Elevator motor
Gear (A)
Timing Gear
(F)
(G)
CR chassis
Adjustment Jig
(☆)
Free roller
Feed drive roller
Homeposition switch arm
Home-position switch
Magazine

Figure 19

Mechanism Function Description

Function	Step	Description	Illustration
Magazine Insertion	①	When the magazine is inserted, the eject lever is pushed in.	Figure 20
	②	The eject lever causes the magazine lock arm to move.	
	③	The magazine lock arm causes the magazine to lock and the magazine lock switch to be switched on.	

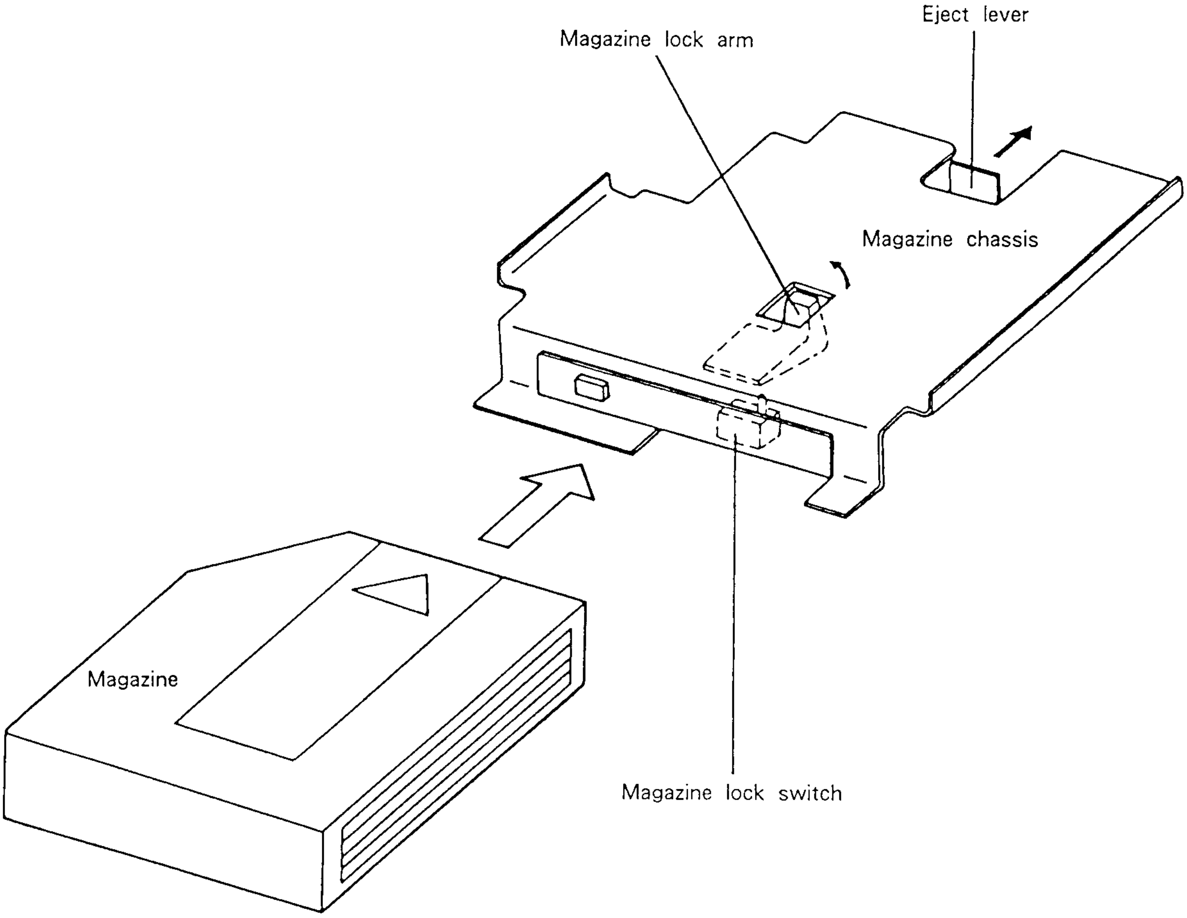

Eject lever
Magazine lock arm
Magazine chassis
Magazine
Magazine lock switch

Figure 20

Function	Step	Description	Illustration
Disc Loading	①	The elevator motor rotates.	Figure 21
	②	The rotation is transmitted to gears (A), (B), (C), (D) and (E).	
	③	The CR chassis is moved in the (F) direction by rotation of gear (E).	
	④	The photo-interrupter counts the H-holes on gear (C) to control the movement distance of the CR chassis.	
	⑤	The CR chassis is stopped at the position of the first disc in the magazine. * For the 2nd through 6th discs the movement distance of the CR chassis is the only thing that changes : the operation is the same.	
	⑥	The loading motor rotates. (The loading motor can rotate forward and in reverse.)	
	⑦	The rotation is transmitted to gears (I), (J), (K) and (L).	
	⑧	Simultaneous with the action of Step (7), the rotation is transmitted to gears (I), (J), (M), (N) and (O).	
	⑨	The rotation of gear (L) causes the disc eject lever to make a back-and-forth movement in the (P) and (Q) directions.	
	⑩	The disc eject lever causes the disc to be ejected from the magazine.	
	⑪	Since gear (O) and the feed drive roller are on the same axle, the rotation of gear (O) will cause the feed drive roller to rotate.	Figure 22
	⑫	The disc is sandwiched between the feed drive roller and the free roller and the disc moves in the direction of the clamper.	
	⑬	Photosensors (1), (2) and (3) are consecutively blocked by the disc and finally, only photosensor (3) is a blocked condition.	Figure 21
	⑭	The loading motor stops upon the judgment that the disc has entered.	
	⑮	The elevator motor rotates. (Rotation is in the opposite direction of Step (1). The elevator motor can rotate forward and in reverse.)	
	⑯	The rotation is transmitted to gears (A), (B), (C) and (D).	
	⑰	The rotation of gear (E) causes the CR chassis to move in the (G) direction.	
	⑱	The movement of the CR chassis causes the clamper to move and clamp the disc.	
	⑲	The movement of the CR chassis causes the home-position switch arm to move, and the home-position switch is switched on.	
	⑳	The photo-interrupter counts the H-holes on gear (C), and the elevator motor is stopped upon judgment that the CR chassis has reached the home position.	

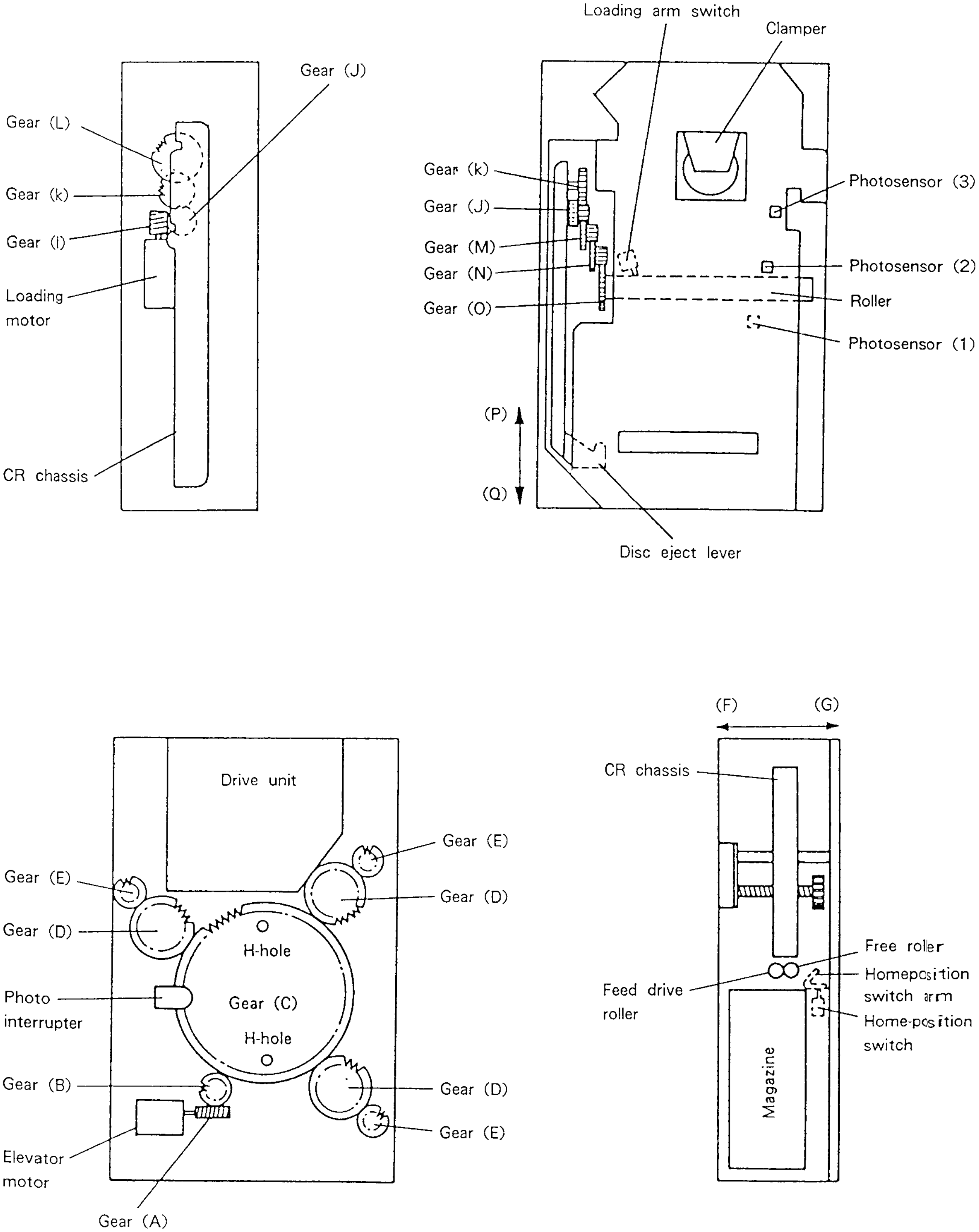

Gear (J)
Gear (L)
Gear (k)
Gear (l)
Loading motor
CR chassis
Loading arm switch
Clamper
Gear (k)
Gear (J)
Gear (M)
Gear (N)
Gear (O)
Photosensor (3)
Photosensor (2)
Roller
Photosensor (1)
(P)
(Q)
Disc eject lever
Drive unit
Gear (E)
Gear (D)
Gear (E)
Gear (D)
H-hole
Photo interrupter
Gear (C)
H-hole
Gear (B)
Gear (D)
Gear (E)
Elevator motor
Gear (A)
(F)
(G)
CR chassis
Free roller
Feed drive roller
Homeposition switch arm
Home-position switch
Magazine

Figure 21

Function	Step	Description	Illustration
Play	①	The spidle motor rotates the disc.	Figure 23
	②	The rotation of the sled motor is transmitted through the gears to the feed screw and causes the pickup to move.	
	③	The lead-in position of the disc is detected by the inner limit position switch and the reading of the disc data begins.	
Return of the disc to the magazine	①	The elevator motor rotates.	Figure 21
	②	The rotation is transmitted to gears (A), (B), (C), (D) and (E).	
	③	The CR chassis is moved in the (F) direction by the rotation of gear (E).	
	④	The clamper is removed.	
	⑤	The photo-interrupter counts the H-holes on gear (C) to control the movement distance of the CR chassis.	
	⑥	The disc is sandwiched between the feed drive roller and the free roller.	
	⑦	The CR chassis is stopped at the position of the first disc in the magazine. * For the 2nd through 6th disc the movement distance of the CR chassis is the only thing that changes : the operation is the same.	
	⑧	The loading motor rotates.	Figure 24
	⑨	The rotation is transmitted to gears (I), (J), (M), (N) and (O).	Figure 21
	⑩	The rotation of gear (O) causes the feed drive roller to rotate and to move in the direction of the disc magazine.	
	⑪	Blockage of photosensor (3) by the disc is cancelled.	
	⑫	The movement of the disc blocks photosensors (2) and (1) and cancels the blocking.	
	⑬	The blocking of photosensor (1) is cancelled and the disc is judged to have been housed in the magazine.	
	⑭	The loading motor stops.	

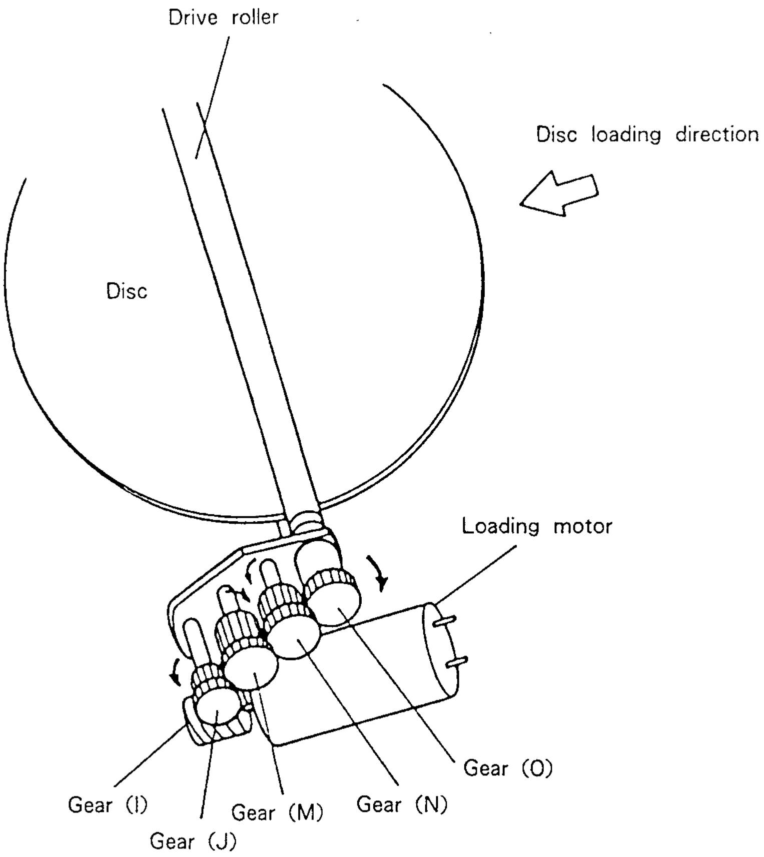

Drive roller
Disc loading direction
Disc
Loading motor
Gear (O)
Gear (I)
Gear (M)
Gear (N)
Gear (J)

Figure 22

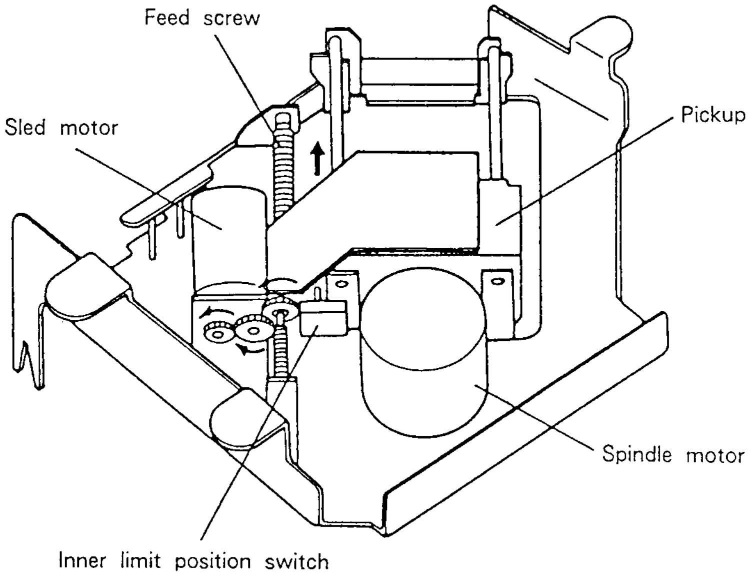

Feed screw
Sled motor
Pickup
Spindle motor
Inner limit position switch

Figure 23

Function	Step	Description	Illustration
Magazine Ejection	①	Press the eject switch.	Figure 25
	②	The elevator motor rotates.	Figure 21
	③	The rotation is transmitted to gears (A), (B), (C), (D) and (E).	
	④	The CR chassis is moved in the (G) direction by the rotation of gear (E).	
	⑤	The movement of the CR chassis causes the home-position switch arm to move, and the home-position switch is switched on.	
	⑥	The photo-interrupter counts the H-holes on gear (C), and the elevator motor is stopped upon judgment that the CR chassis has reached the home position.	
	⑦	The loading motor rotates.	
	⑧	The rotation is transmitted to gears (J), (K), and (L).	
	⑨	The rotation of gear (L) causes the disc eject lever to make a back-and-forth movement in the (P) and (Q) directions.	
	⑩	The disc eject lever causes the eject arm to move.	Figure 25
	⑪	The eject arm causes the eject lever to move, the magazine lock arm is released and the magazine is ejected.	
	⑫	The magazine lock switch is switched off and there is a judgment that the magazine has been ejected.	Figure 21

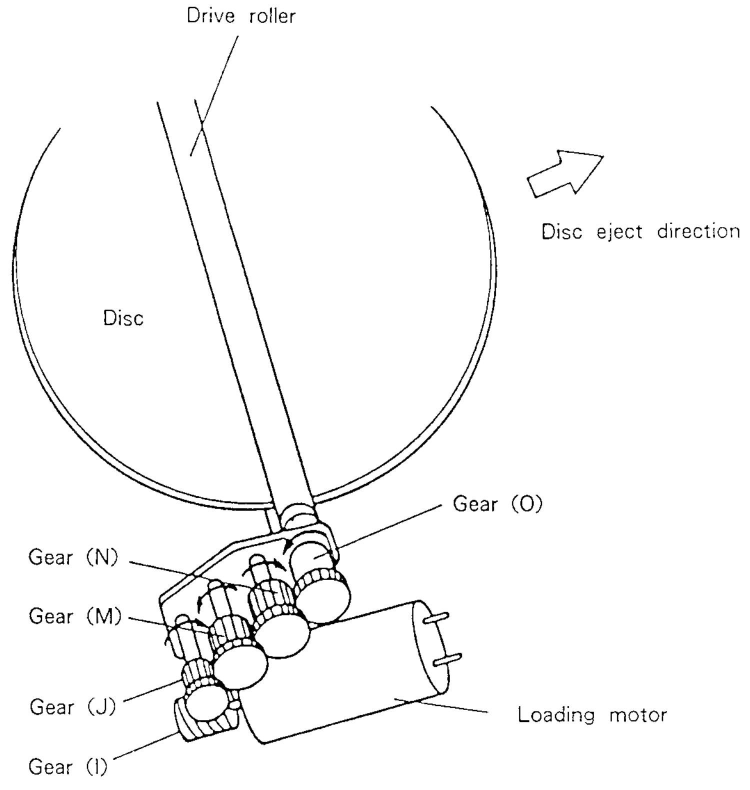

Drive roller
Disc eject direction
Disc
Gear (O)
Gear (N)
Gear (M)
Gear (J)
Gear (I)
Loading motor

Figure 24

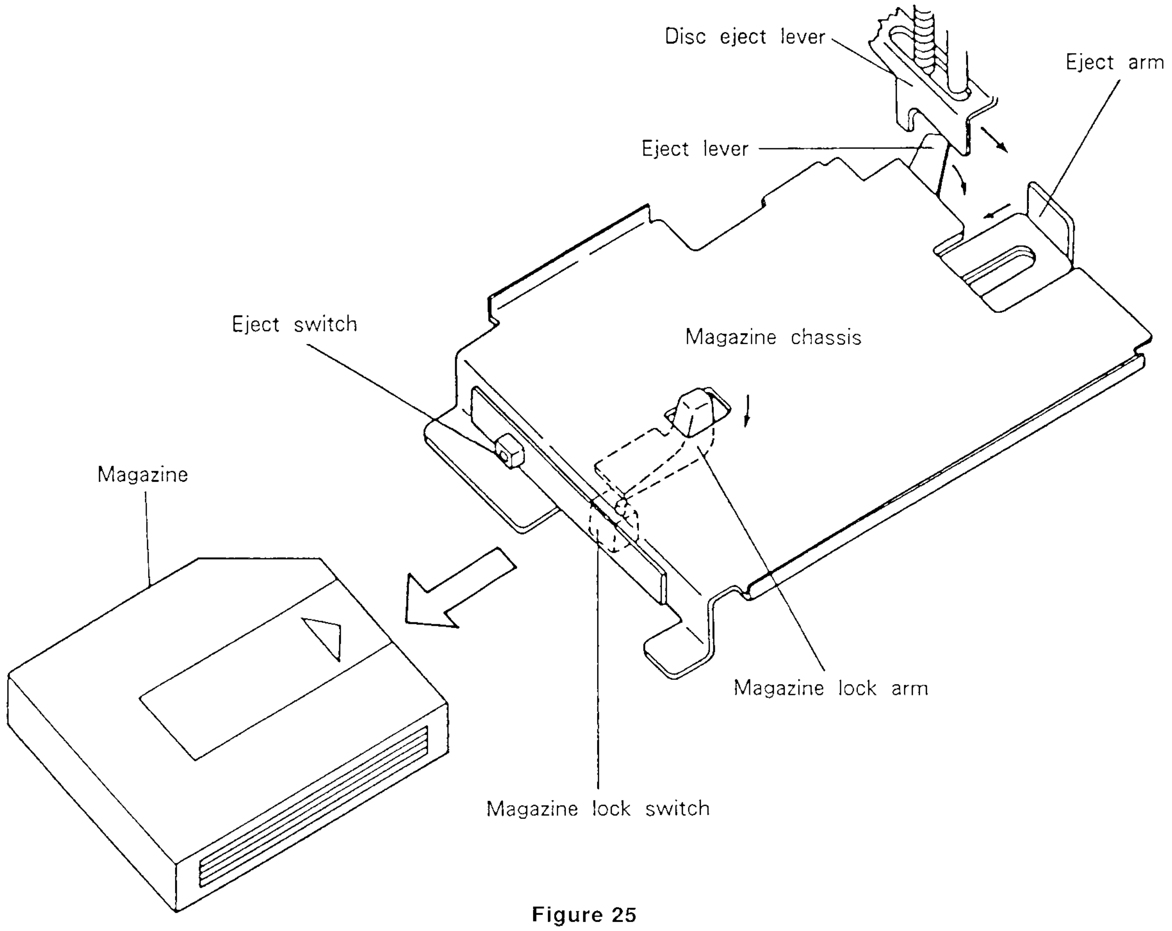
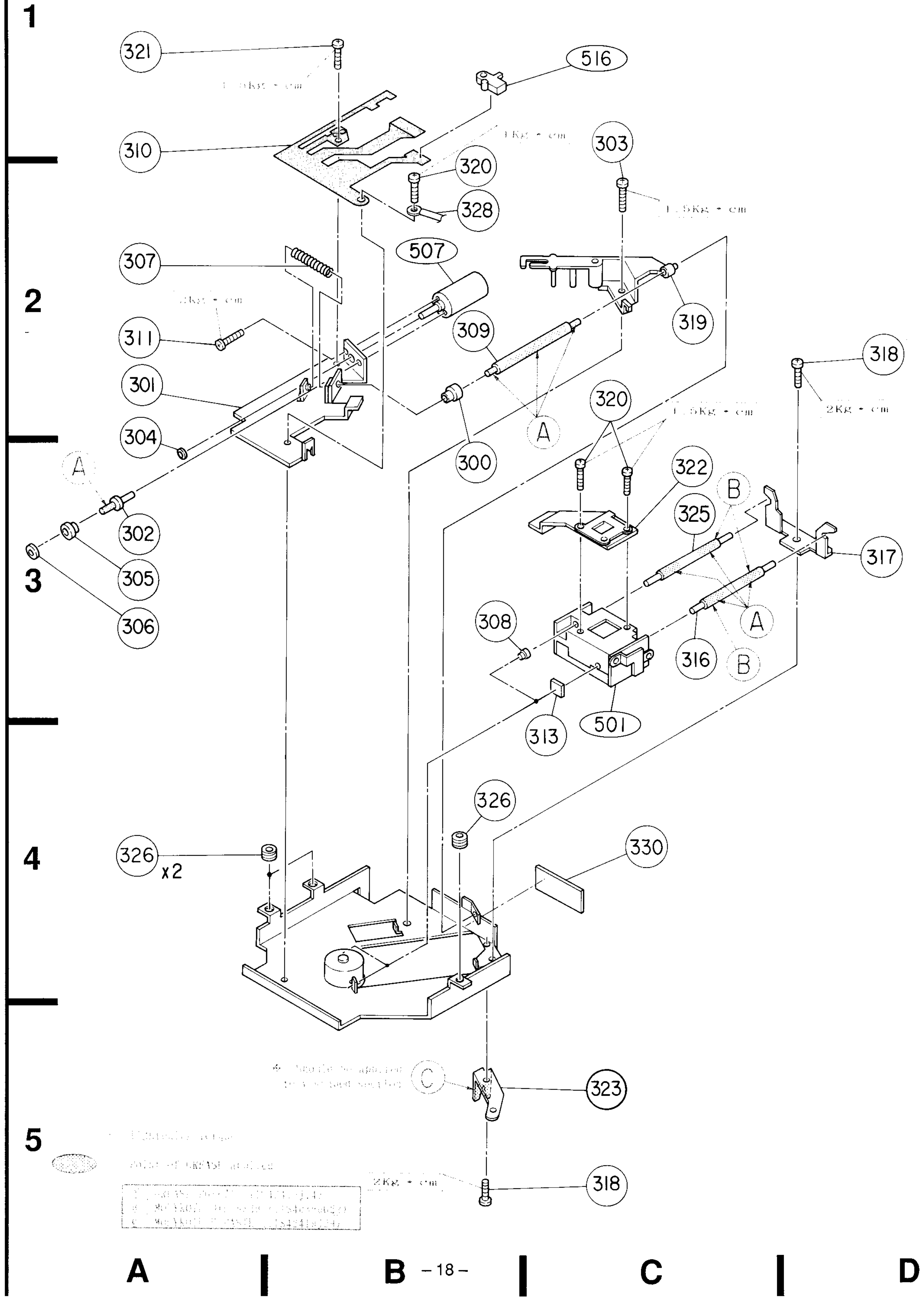

Disc eject lever
Eject arm
Eject lever
Eject switch
Magazine chassis
Magazine
Magazine lock arm
Magazine lock switch

Figure 25

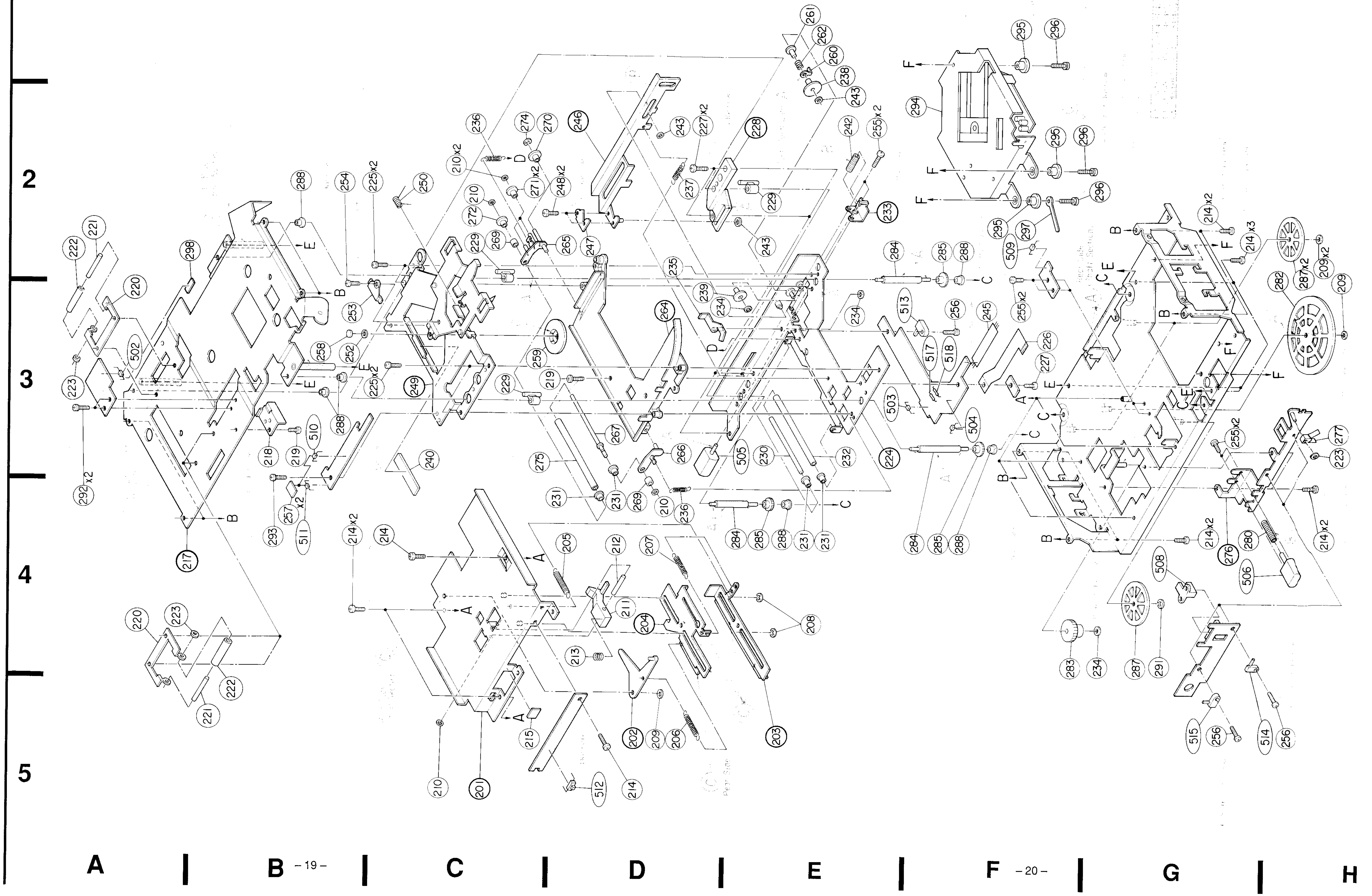
Exploded View (CD Mechanism) (1/2)

- For DR24A010 Model only


1
2
3
4
5
321
516
310
320
328
303
507
307
311
309
319
318
301
320
304
300
A
322
A
B
325
302
317
305
308
A
306
316
B
313
501
326
326
x2
330
C
323
318
2Kg · cm
A
B
C
D

Exploded View (CD Mechanism) (2/2)

- For DR24A010 Model only


1
2
3
4
5
A
B
C
D
E
F
G
H
222
221
220
298
223
502
292 x2
217
B
E
288
254
225 x2
250
253
258
252
225 x2
E
E
288
218
219
510
219
293
257 x2
511
B
220
223
222
221
236
274
270
246
D
210 x2
271 x2
248 x2
210
272
269
229
265
247
249
229
259
219
240
275
267
231
231
269
210
236
266
264
243
227 x2
228
237
229
243
235
239
234
D
505
230
232
224
284
285
288
231
231
C
242
255 x2
233
261
262
260
238
243
234
214 x2
214
A
A
205
212
207
211
204
208
213
202
209
206
203
215
A
210
201
512
214
294
295
296
F
F
F
295
296
295
296
297
284
285
288
C
513
256
245
517
518
255 x2
509
226
227
503
504
284
285
288
C
214 x2
214 x3
209 x2
287 x2
282
209
B
E
C
B
F
F
255 x2
277
223
214 x2
276
280
214 x2
506
508
283
234
287
291
515
256
514
256

CD Mechanism Assembly Parts List

<For DR24A010 Model Only>

Symbol No.	Index	Part No.	Description		
205	4-D	41B11514W04	Spring, Extension		
206	5-D	41B11514W05	Spring, Extension		
207	4-D	41B11514W06	Spring, Extension		
208	4-E	04C42091G02	Ring, "E" (M3. 2)		
209		04B41345P04	Washer, Lock (M2. 6)		
210		04B41345P02	Washer, Lock (M1. 7)		
211	4-D	45A11483W01	Arm, Lock Magazine		
212	4-D	47A11405W01	Shaft, Arm Lock		
213	4-D	41A11480W02	Spring, Compression		
214		03S44205G30	Screw, Pan (M2. 6 × 4)		
215	5-C	14S20875W87	Insulator, Cover		
218	3-B	43A13109W01	Spacer, Magazine		
219		03S44205G87	Screw, Pan (M2 × 4)		
220		41A11425W01	Spring, M. Hold		
221		47A11428W01	Roller, M. Hold		
222		47A11429W01	Shaft, Roller		
223		04B41345P01	Washer, Lock (M1. 2)		
225		03S40014G15	Screw, W/Washer (M2 × 8)		
226	3-F	84T11243W01	FPC Elevator P. C. Board		
227		03S40014G61	Screw, W/Washer (M2 × 5)		
229		45A11284W01	Arm, Elevator		
230	3-E	47A11273W01	Shaft, Roller Under		
231		43A11272W01	Bush, Roller		
232	3-E	75A11925W01	Rubber, Roller		
234		04B41345P13	Washer, Lock (M1. 7)		
235	2-D	01A11565W01	Assy., Rivet Arm Switch DL		
236		41B11514W08	Spring, Extension		
237	2-D	41B11514W02	Spring, Extension		
238	2-E	44A11481W01	Gear, Lever Middle		
239	3-D	44B22139W01	Gear, Lever		
240	3-C	75A96179F01	Sheet, Support Disc		
242	2-E	44A11281W01	Worm		
243		04B41345P22	Washer, Lock (M2. 6)		
245	3-F	30T73687F17	Parallel, Wire (3P)		
247	2-D	45A11441W01	Arm, Block A Magazine		

Symbol No.	Index	Part No.	Description		
248	2-D	03S94385F01	Screw, Pan (M1. 7 × 2. 3)		
250	2-C	41A11559W01	Spring, Torsion		
252	3-B	04B41345P24	Washer, Lock (M2. 1)		
253	3-B	07A11468W01	Plate, Top		
254	2-B	03S44205G94	Screw, Pan (M1. 7 × 2)		
255		03S40014G62	Screw W/Washer (M2 × 3)		
256		03S10042W06	Screw, Pan (M2 × 7)		
257	4-B	75S72374F97	Cushion, Rubber		
258	3-B	43A41006F01	Spacer, Polyslider		
259	3-C	01A31486W01	Assy., Rivet Clamper		
260	1-E	45A31789W01	Arm, Kick Gear		
261	1-E	43A11485W01	Bush, Gear		
262	1-E	41A11480W01	Spring, Compression		
265	2-D	01A11566W01	Assy., Rivet Arm Roller		
266	3-D	01A11567W01	Assy., Rivet Arm Roller (R)		
267	3-D	47A11274W01	Shaft, Roller		
269		47A11302W01	Roller, Lifter		
270	2-C	44A11278W01	Worm		
271	2-C	44A11279W01	Gear, Roller Middle		
272	2-C	44A11280W01	Gear, Loading Roller		
274	2-C	04C42091G06	Ring, "E" (M1. 5)		
275	3-C	75A11925W01	Rubber, Roller		
277	3-H	45A11265W01	Arm, Switch HP		
280	4-G	44A11276W01	Worm		
282	2-H	44B11283W01	Gear, Timing		
283	4-F	44A11275W01	Worm Wheel		
284		47A12135W01	Shaft, Screw Elevator		
285		44A11277W01	Gear, Screw		
287		44B11282W01	Gear, Idle		
288		43A11271W01	Bearing, Screw Elevator		
291	4-G	04C42091G11	Ring, "E" (M2. 5)		
292	4-A	03S94385F09	Screw, Pan (M2 × 3)		
293	4-B	03S44205G99	Screw, Bind (M2 × 3)		
294	2-F	01V21800W05	Assy., Drive Unit		
295		43A12211W01	Sleeve, Cushion		

NOTE : The parts without part numbers are not supplied.

Symbol No.	Index	Part No.	Description		
296		03S38013W10	Screw, Pan (M2 X 7)		
297	2-F	29C41045P09	Lug, Wrap Around		
298	2-A	75A20928W01	Rubber, Top Chassis		
300	3-B	44A90998F01	Gear, Screw		
301	2-A	07C10922W02	Bracket, Motor		
302	3-A	46A91007F02	Stud, Gear		
303	1-C	03S40014G07	Screw, W/Washer (M2 X 4)		
304	2-A	44A90996F01	Gear, Motor		
305	3-A	44A90997F01	Gear, Middle		
306	3-A	04B41345P02	Washer, Lock (M1. 7)		
307	2-A	41A10928W03	Spring, Shaft-150		
308	3-B	43A13508W01	Spacer, Shaft		
309	2-B	47A10927W01	Shaft, Screw		
310	1-A	84T15149W01	FPC Actuate P. C. Board		
311	3-A	03S40014G66	Screw, W/Washer (M2 X 3. 5)		
313	4-C	75A21138W01	Sheet, Shaft		
316	3-C	47A20146W01	Shaft, Pick-Up-50°		
317	3-D	07A10921W01	Bracket, Shaft		
318		03S40014G62	Screw, W/Washer (M2 X 3)		
319	2-C	07B10923W01	Bracket, Screw		
320		03D40121T38	Screw, W/Double Washer (M2 X 5)		
321	1-A	03S40014G69	Screw, W/Washer (M2 X 8. 5)		
322	3-C	41C10925W02	Spring, Nut		
325	3-C	47A21175W01	Shaft, Pick-Up -50°(B)		
326		75A12210W01	Rubber, Cushion		
328	2-B	01T70458F02	Assy., GND Wire		
330	4-C	14S81482F10	Insulator, Cover		

Symbol No.	Index	Part No.	Description		
Miscellaneous					
501	3-C	88T15309W01	Pick-Up SF-87. 5		
502	3-A	48T16057W01	LED, AN501 (RED)		
503	3-E	48T16057W02	LED, AN501-B1 (RED)		
504	3-F	48T16057W02	LED, AN501-B1 (RED)		
505	3-E	59T90879F01	Motor, Load 6V-260mA (LOADING)		
506	4-G	59T15716W01	Motor, Load 8V-330mA (ELEVATOR)		
507	2-C	59T52973F03	Motor, Servo 6V-210mA (SLED)		
508	4-G	48T15722W01	Interrupter Photo, GP1S51		
509	2-F	48T15938W02	TR., Photo PS5022		
510	3-B	48T15938W02	TR., Photo PS5022		
511	4-B	48T15938W02	TR., Photo PS5022		
512	5-D	40T10876W12	Switch, Tact SKHLAJ (EJECT)		
513	3-E	40T71025F01	Switch, Detector (LOADING)		
514	5-H	40T71025F01	Switch, Detector (HOME POSITION)		
515	5-G	40T71025F01	Switch, Detector (MAGAZINE)		
516	1-C	40T71025F01	Switch, Detector (LIMIT)		

NOTE : The parts without part numbers are not supplied.

CD Mechanism Assembly Parts List

<For DR24A020 Model Only>

Symbol No.	Index	Part No.	Description		
205	4-D	41B11514W04	Spring, Extension		
206	5-D	41B11514W05	Spring, Extension		
207	4-D	41B11514W06	Spring, Extension		
208	4-E	04B41345P39	Washer, Lock (M3. 5)		
209		04B41345P04	Washer, Lock (M2. 6)		
210		04B41345P02	Washer, Lock (M1. 7)		
211	4-D	45A11483W01	Arm, Lock Magazine		
212	4-D	47A11405W01	Shaft, Arm Lock		
213	4-D	41A11480W02	Spring, Compression		
214		03S44205G30	Screw, Pan (M2. 6 X 4)		
215		04C42091G06	Ring, "E" (M1. 5)		
218		03S44205G99	Screw, Bind (M2 X 3)		
219	3-C	03S44205G87	Screw, Pan (M2 X 4)		
220		43A11271W01	Bearing, Screw Elevator		
221		44B11282W01	Gear, Idle		
222		44A11277W01	Gear, Screw		
223		04B41345P01	Washer, Lock (M1. 2)		
225		03S38013W07	Screw, Pan (M2 X 8. 5)		
226	3-F	84T11243W01	EPC Elevator P. C. Board		
227		03S44205G95	Screw, Bind (M2 X 4)		
229		45A11284W01	Arm, Elevator		
230	3-E	01A40510W01	Assy., Shaft Roller Under		
231		43A11272W01	Bush, Roller		
232	4-G	04C42091G11	Ring, "E" (M2. 5)		
233		47A12135W01	Shaft, Screw Elevator		
234		04B41345P13	Washer, Lock (M1. 7)		
235	3-D	01A11565W01	Assy., Rivet Arm Switch		
236		41B11514W08	Spring, Extension		
237	2-D	41B11514W02	Spring, Extension		
238	2-E	44A11481W01	Gear, Lever Middle		
239	2-E	44B22139W01	Gear, Lever		
240	4-F	41A31495W01	Spring, Elevator		
242	2-E	44A11281W01	Worm		
243	2-E	04B41345P22	Washer, Lock (M2. 6)		
245	3-F	30T73687F17	Wire, Parallel (3P)		

Symbol No.	Index	Part No.	Description		
247	2-D	45A11441W01	Arm, Block A Magazine		
248	2-D	03S94385F01	Screw, Pan (M1.7 X 2. 3)		
250	2-C	41A11559W01	Spring, Torsion		
252	3-B	04B41345P24	Washer, Lock (M2. 1)		
253	3-B	07A31787W01	Plate, Top		
254	2-B	03S44205G94	Screw, Pan (M1.7 X 2)		
255		03S40014G62	Screw, W/Washer (M2 X 3)		
256		03S10042W06	Screw, Pan (M2 X 7)		
257	2-G	29C41045P09	Lug, Wrap Around		
258	3-B	43A41006F01	Spacer, Polyslider		
259	3-C	01A31782W01	Assy., Rivet Clamper		
260	2-E	45A31789W01	Arm, Kick Gear		
261	2-E	43A11485W01	Bush, Gear		
262	2-E	41A11480W01	Spring, Compression		
265	2-D	01A31779W01	Assy., Rivet Arm Roller (L)		
266	3-D	01A31780W01	Assy., Rivet Arm Roller (R)		
267	3-D	01A40509W01	Assy., Shaft Roller		
268	4-F	44A11275W01	Worm, Wheel		
269		47A11302W01	Roller, Lifter		
270	2-C	44A11278W01	Worm		
271	2-C	44A11279W01	Gear, Roller Middle		
272	2-C	44A11280W01	Gear, Loading Roller		
273		03S38013W10	Screw, Pan (M2 X 7)		
274	2-G	44B11283W01	Gear, Timing		
275		43A12211W01	Sleeve, Cushion		
277	3-H	45A31790W01	Arm, Switch HP		
278	2-F	01V21800W05	Assy., Drive Unit		
280	4-G	44A11276W01	Worm		
282	3-C	43A41006F01	Spacer, Polyslider		
283		03S40014G12	Screw, W/Washer (M2.6 X 4)		
284		41A11425W01	Spring, M. Hold		
285		47A11428W01	Roller, M. Hold		
286		47A11429W01	Shaft, Roller		
287		03S44205G96	Screw, Bind (M2 X 5)		
300	3-B	44A90998F01	Gear, Screw		
301	2-A	07C10922W02	Bracket, Motor		
302	3-A	46A91007F02	Stud, Gear		
303	2-C	03S40014G07	Screw, W/Washer (M2 X 4)		
304	2-A	44A90996F01	Gear, Motor		
305	3-A	44A90997F01	Gear, Middle		

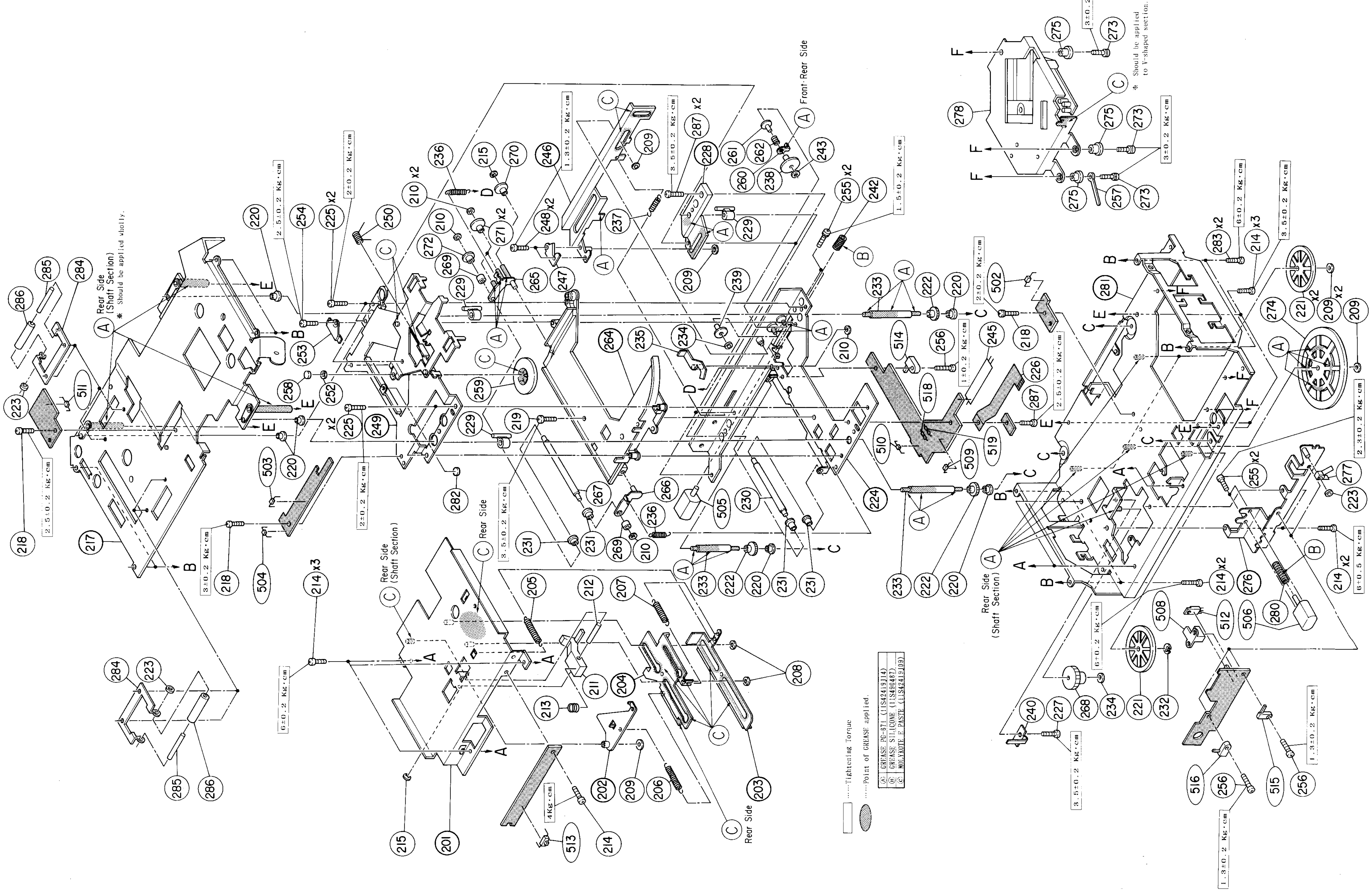
NOTE : The parts without part numbers are not supplied.

Symbol No.	Index	Part No.	Description		
306	3-A	04B41345P02	Washer, Lock (M1. 7)		
307	2-A	41A10928W03	Spring, Shaft-150		
308	3-B	43A13508W01	Spaceer, Shaft		
309	2-B	47A10927W01	Shaft, Screw		
310	2-A	84T15149W01	FPC Actuate P. C. Board		
311	2-A	03S40014G66	Screw, W/Washer (M2 × 3. 5)		
312	2-B	01T70458F02	Assy., GND Wire		
313	4-C	75A21138W01	Sheet, Shaft		
315		75A12210W01	Rubber, Cushion		
316	3-C	47A20146W01	Shaft, Pick-Up-50°		
317	3-D	07A10921W01	Bracket, Shaft		
318		03S40014G62	Screw, W/Washer (M2 × 3)		
319	2-C	07B10923W01	Bracket, Screw		
320		03D40121T38	Screw, W/Double Washer (M2 × 5)		
321	1-B	03S40014G69	Scerw, W/Washer (M2 × 8. 5)		
322	3-C	41C10925W02	Spring, Nut		
324	3-C	47A21175W01	Shaft, Pick-Up-50° (B)		
325	4-C	14S81482F10	Insulator, Cover		
			Miscellaneous		
501	4-C	88T15309W01	Pick-Up Unit SF-87. 5		
502	2-F	48T16057W01	LED, AN501 (RED)		
503	3-B	48T16057W01	LED, AN501 (RED)		
504	4-B	48T16057W01	LED, AN501 (RED)		
505	3-D	59T90879F01	Motor, Load 6V-260mA (LOADING)		
506	4-G	59T15716W01	Motor, Load 8V-330mA (ELEVATOR)		
507	2-B	59T52973F03	Motor, Servo 6V-210mA (SLED)		
508	4-G	48T15722W01	Interrupter, Photo GP1S51		
509	3-F	48T15938W03	Transistor, Photo PS5022-B1		
510	3-E	48T15938W03	Transistor, Photo PS5022-B1		
511	3-A	48T15938W02	Transistor, Photo PS5022		
512	4-G	48T51089F04	Transistor, 2SA937		
513	5-D	40T10876W12	Switch, Tact SKHLAJ (EJECT)		
514	3-E	40T71025F01	Switch, Detector (LOADING)		
515	5-G	40T71025F01	Switch, Detector (HOME POSITION)		
516	5-G	40T71025F01	Switch, Detector (MAGAZINE)		
517	1-C	40T71025F01	Switch, Detector (LIMIT)		

NOTE : The parts without part numbers are not supplied.

Exploded View (CD Mechanism) (1/2)

- For DR24A020 Model Only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E
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G
H
Rear Side (Shaft Section)
* Should be applied wholly.
Front·Rear Side
Rear Side
* Should be applied to V-shaped section.
2.5±0.2 Kg·cm
2±0.2 Kg·cm
3.5±0.2 Kg·cm
1.3±0.2 Kg·cm
1.5±0.2 Kg·cm
3±0.2 Kg·cm
6±0.2 Kg·cm
1±0.2 Kg·cm
2.3±0.2 Kg·cm
6±0.5 Kg·cm
4Kg·cm
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x3
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519

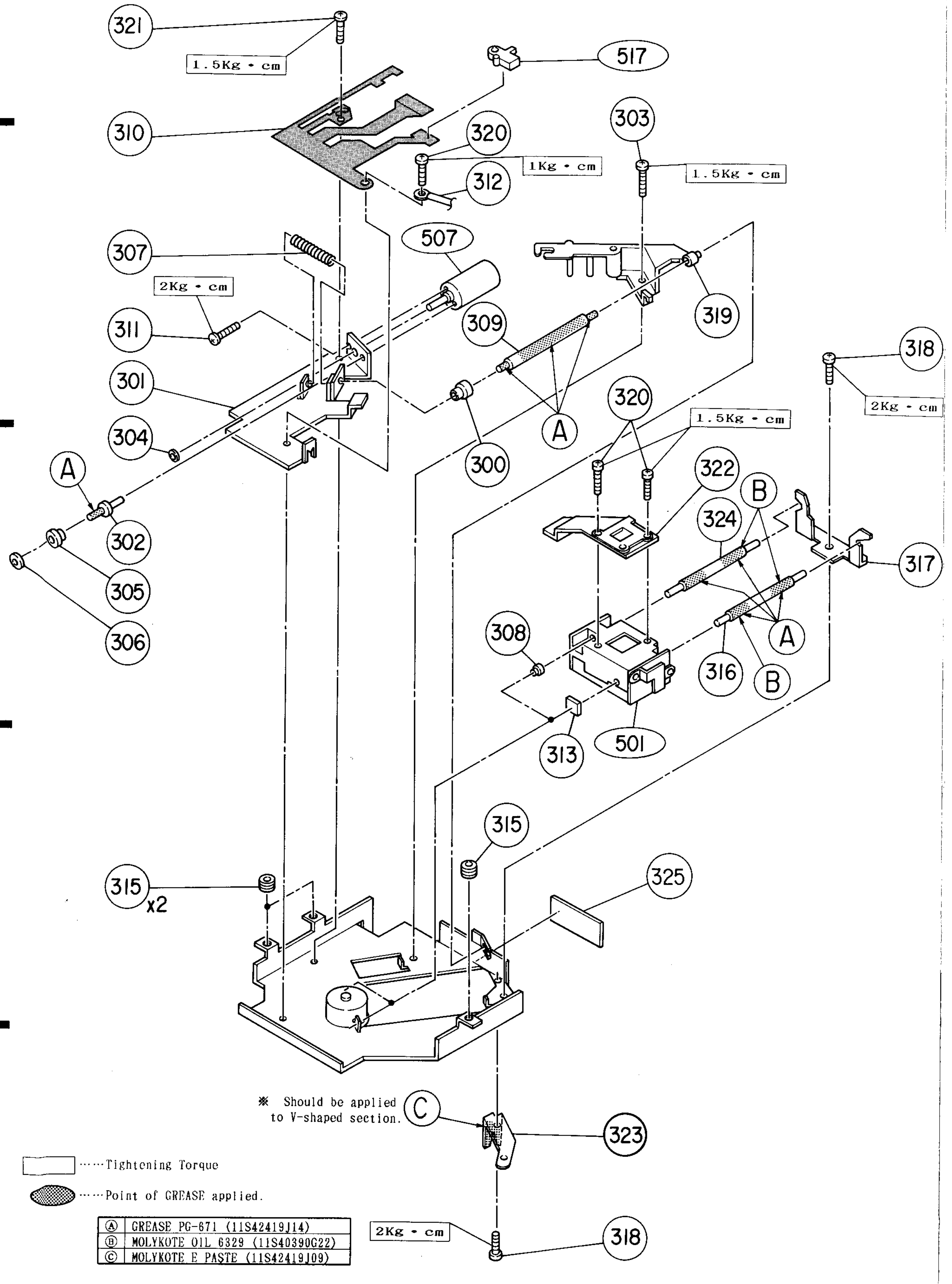
▭ ......Tightening Torque

▨ ......Point of GREASE applied.

Ⓐ	GREASE PG-671 (11S42419J14)
Ⓑ	GREASE SILICONE (11S4904487)
Ⓒ	MOLYKOTE E PASTE (11S42419J09)

Exploded View (CD Mechanism) (2/2)

● For DR24A020 Model only


1
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321
1.5Kg • cm
517
310
303
320
1Kg • cm
312
1.5Kg • cm
507
307
2Kg • cm
319
311
309
318
2Kg • cm
301
320
1.5Kg • cm
304
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300
322
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324
302
317
305
306
308
A
316
B
313
501
315
315
x2
325
※ Should be applied to V-shaped section.
C
323
2Kg • cm
318
A
B
C
D

▭ ······Tightening Torque

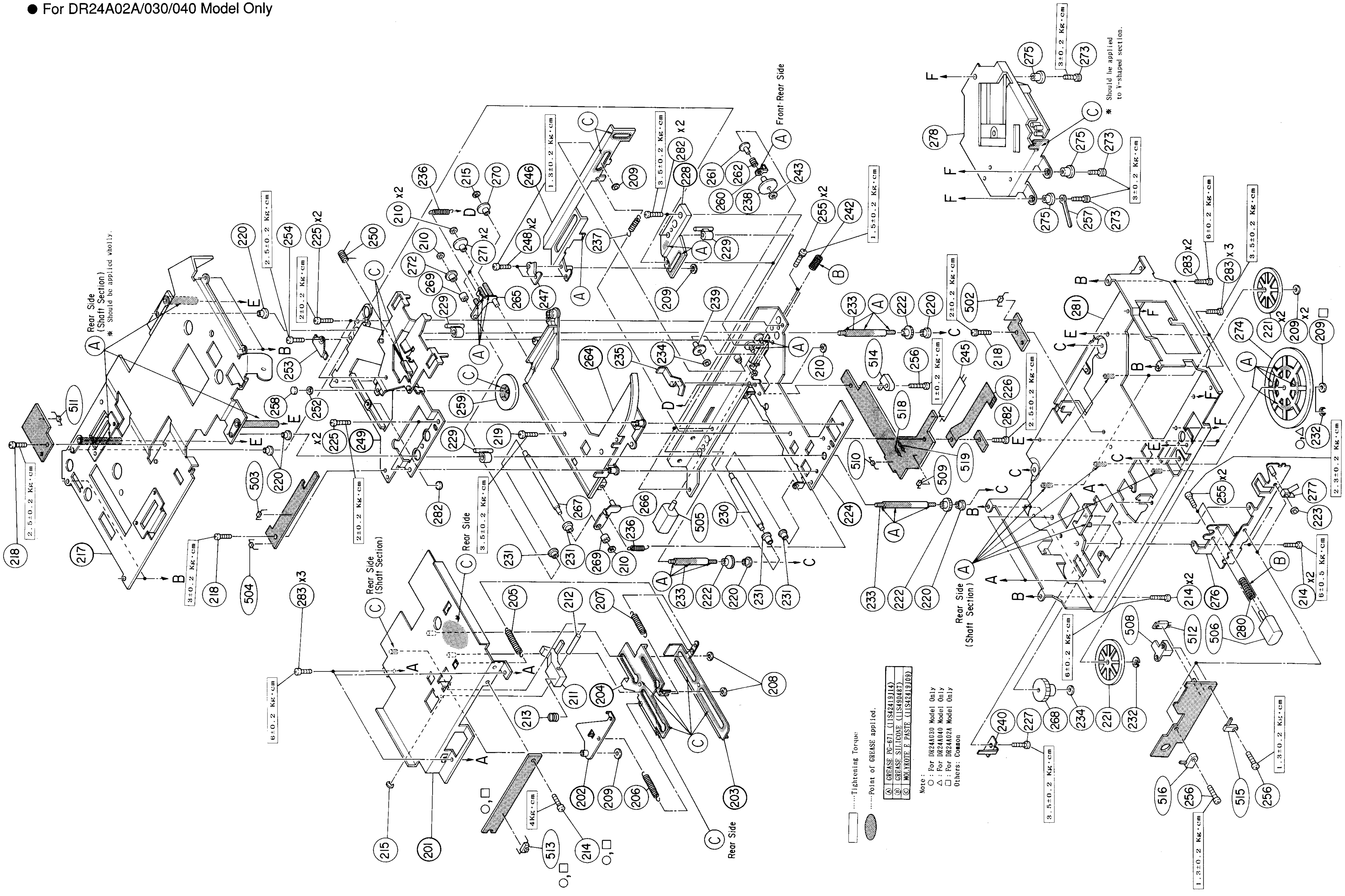
▨ ······Point of GREASE applied.

Ⓐ	GREASE PG-671 (11S42419J14)
Ⓑ	MOLYKOTE OIL 6329 (11S40390G22)
Ⓒ	MOLYKOTE E PASTE (11S42419J09)

Memo

Exploded View (CD Mechanism) (1/2)

- For DR24A02A/030/040 Model Only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Rear Side (Shaft Section)
* Should be applied wholly.
Front·Rear Side
Rear Side
* Should be applied to V-shaped section.
2.5±0.2 Kg·cm
2±0.2 Kg·cm
3±0.2 Kg·cm
6±0.2 Kg·cm
4Kg·cm
3.5±0.2 Kg·cm
1.8±0.2 Kg·cm
1.5±0.2 Kg·cm
1±0.2 Kg·cm
2.3±0.2 Kg·cm
6±0.5 Kg·cm
1.3±0.2 Kg·cm
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504
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506
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509
510
511
512
513
514
515
516
518
519
x2
x3
○,□
○,△

▭ ......Tightening Torque

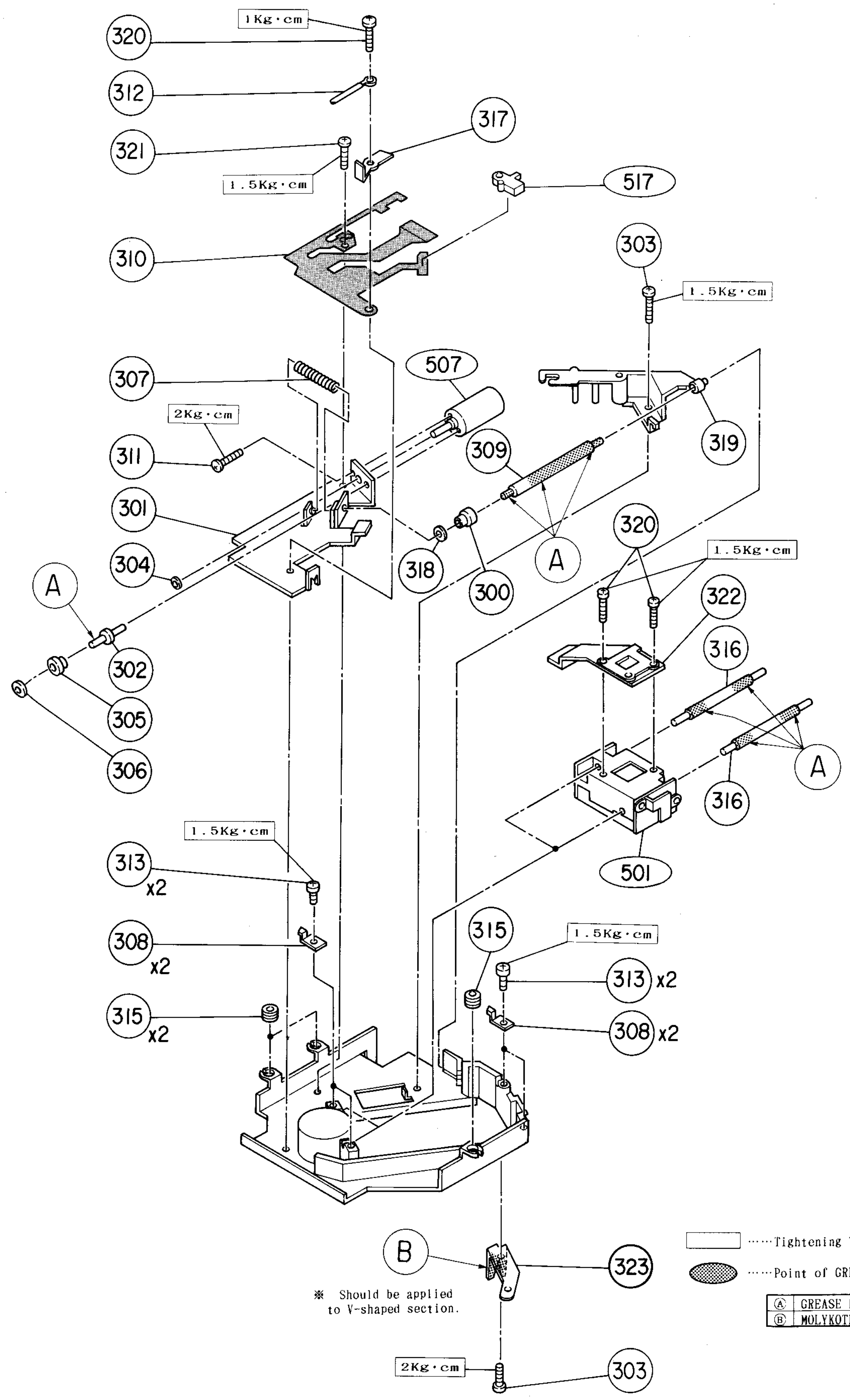
▨ ......Point of GREASE applied.

Ⓐ	GREASE PG-671 (11S424219J14)
Ⓑ	GREASE SILICONE (11S490487)
Ⓒ	MOLYKOTE E PASTE (11S424219J09)

Note:
○ : For DR24A030 Model Only
△ : For DR24A040 Model Only
□ : For DR24A02A Model Only
Others: Common

Exploded View (CD Mechanism) (2/2)

- For DR24A02A/030/040 Model only



320
1Kg·cm
312
321
1.5Kg·cm
317
517
310
303
1.5Kg·cm
307
507
2Kg·cm
311
309
319
301
304
A
318
300
A
320
1.5Kg·cm
322
A
302
316
305
306
A
316
501
1.5Kg·cm
313
x2
308
x2
315
x2
315
1.5Kg·cm
313 x2
308 x2
B
323
※ Should be applied
to V-shaped section.
2Kg·cm
303

▭ ……Tightening Torque

▨ ……Point of GREASE applied.

Ⓐ	GREASE PG-671 (11S42419J14)
Ⓑ	MOLYKOTE E PASTE (11S42419J09)

Memo

CD Mechanism Assembly Parts List

<For DR24A02A/030/040 Model Only>

Symbol No.	Index	Part No.	Description		
205	4-D	41B11514W04	Spring, Extension		
206	5-D	41B11514W05	Spring, Extension		
207	4-D	41B11514W06	Spring, Extension		
208	4-E	04B41345P39	Washer, Lock (M3. 5)		
209		04B41345P04	Washer, Lock (M2. 6)		
210		04B41345P02	Washer, Lock (M1. 7)		
211	4-D	45A11483W01	Arm, Lock Magazine		
212	4-D	47A11405W01	Shaft, Arm Lock		
213	4-D	41A11480W02	Spring, Compression		
214		03S44205G30	Screw, Pan (M2. 6 × 4)		
215		04C42091G06	Ring, "E" (M1. 5)		
218		03S44205G99	Screw, Bind (M2 × 3)		
219	3-C	03S44205G87	Screw, Pan (M2 × 4)		
220		43A11271W01	Bearing, Screw Elevator		
221		44B11282W01	Gear, Idle		
222		44A11277W01	Gear, Screw		
223	3-H	04B41345P01	Washer, Lock (M1. 2)		
225		03S38013W07	Screw, Pan (M2 5 8. 5)		
226	3-F	84T11243W01	EPC Elevator P. C. Board		
227	4-F	03S44205G95	Screw, Bind (M2 × 4)		
229		45A11284W01	Arm, Elevator		
230	3-E	01A40510W01	Assy., Shaft Roller Under		
231		43A11272W01	Bush, Roller		
232		04C42091G11	Ring, "E" (M2. 5)		
233		47A12135W01	Shaft, Screw Elevator		
234		04B41345P13	Washer, Lock (M1. 7)		
235	3-D	01A11565W01	Assy., Rivet Arm Switch		
236		41B11514W08	Spring, Extension		
237	2-D	41B11514W02	Spring, Extension		
238	2-E	44A11481W01	Gear, Lever Middle		
239	2-E	44B22139W01	Gear, Lever		
240	4-F	41A31495W01	Spring, Elevator		
242	2-E	44A11281W01	Worm		
243	2-E	04B41345P22	Washer, Lock (M2. 6)		
245	3-F	30T73687F17	Wire, Parallel (3P)		

Symbol No.	Index	Part No.	Description		
247	2-D	45A11441W01	Arm, Block A Magazine		
248	2-D	03S94385F01	Screw, Pan (M1.7 × 2. 3)		
250	2-C	41A11559W01	Spring, Torsion		
252	3-B	04B41345P24	Washer, Lock (M2. 1)		
253	3-B	07A31787W01	Plate, Top		
254	2-B	03S44205G94	Screw, Pan (M1.7 × 2)		
255		03S40014G62	Screw, W/Washer (M2 × 3)		
256		03S10042W06	Screw, Pan (M2 × 7)		
257	2-G	29C41045P09	Lug, Wrap Around		
258	3-B	43A41006F01	Spacer, Polyslider		
259	3-C	01A31782W01	Assy., Rivet Clamper		
260	2-E	45A31789W01	Arm, Kick Gear		
261	2-E	43A11485W01	Bush, Gear		
262	2-E	41A11480W01	Spring, Compression		
265	2-D	01A31779W01	Assy., Rivet Arm Roller (L)		
266	3-D	01A31780W01	Assy., Rivet Arm Roller (R)		
267	3-D	01A40509W01	Assy., Shaft Roller		
268	4-F	44A11275W01	Worm, Wheel		
269		47A11302W01	Roller, Lifter		
270	2-C	44A11278W01	Worm		
271	2-C	44A11279W01	Gear, Roller Middle		
272	2-C	44A11280W01	Gear, Loading Roller		
273		03S38013W10	Screw, Pan (M2 × 7)		
274	2-G	44B11283W01	Gear, Timing		
275		43A12211W01	Sleeve, Cushion		
277	3-H	45A31790W01	Arm, Switch HP		
□ 278	2-F	01V43800W61	Assy., Drive Unit		
○ 278	2-F	01V43500W73	Assy., Drive Unit		
△ 278	2-F	01V43500W73	Assy., Drive Unit		
280	4-G	44A11276W01	Worm		
282		03S44205G96	Screw, Bind (M2 × 5)		
283		03S40014G12	Screw, W/Washer (M2. 6 × 4)		
300	3-B	44A90998F01	Gear, Screw		
301	2-A	07C10922W02	Bracket, Motor		
302	3-A	46A91007F02	Stud, Gear		

NOTE : The parts without part numbers are not supplied.
□ : For DR24A02A Model Only, ○: For DR24A030 Model Only, △: For DR24A040 Model Only, Others : Common.

	Symbol No.	Index	Part No.	Description		
	303	2-C	03S40014G07	Screw, W/Washer (M2 × 4)		
	304	2-A	44A90996F01	Gear, Motor		
	305	3-A	44A90997F01	Gear, Middle		
	306	3-A	04B41345P02	Washer, Lock (M1. 7)		
	307	2-A	41A10928W03	Spring, Shaft-150		
	308		07A30961W01	Stopper, Shaft (B)		
	309	2-B	47A10927W02	Shaft, Screw		
□	310	1-A	84T15149W01	FPC Actuate P. C. Board		
○	310	1-A	84T45270W01	FPC Actuate P. C. Board		
△	310	1-A	84T45270W01	FPC Actuate P. C. Board		
	311	2-A	03S40014G66	Screw, W/Washer (M2 × 3. 5)		
	312	2-B	01T70458F02	Assy., GND Wire		
	313		03S70494F17	Screw, Pan (M1. 7 × 8)		
	315		75A12210W01	Rubber, Cushion		
	316	3-C	47A30925W01	Shaft, Pick-Up		
	317	1-B	07A40743W01	Bracket		
□	318	3-B	04S40075G61	Washer, Polyslider (M2. 1)		
○	318	3-B	04S40075G06	Washer, Polyslider (M2. 1)		
△	318	3-B	04S40075G06	Washer, Polyslider (M2. 1)		
	319	2-C	07B10923W01	Bracket, Screw (M2. 1)		
	320		03D40121T38	Screw, W/Double Washer (M2 × 5)		
	321	1-B	03S40014G69	Scerw, W/Washer (M2 × 8. 5)		
	322	3-C	41C10925W02	Spring, Nut		
				Miscellaneous		
	501	4-C	88T15309W01	Pick-Up Unit SF-87. 5		
	502	2-F	48T16057W01	LED, AN501 (RED)		
	503	3-B	48T16057W01	LED, AN501 (RED)		
	504	4-B	48T16057W01	LED, AN501 (RED)		
	505	3-D	59T90879F01	Motor, Load 6V-260mA (LOADING)		
	506	4-G	59T15716W01	Motor, Load 8V-330mA (ELEVATOR)		
	507	2-B	59T52973F03	Motor, Servo 6V-210mA (SLED)		
	508	4-G	48T15722W01	Interrupter, Photo GP1S51		
	509	3-F	48T15938W03	Transistor, Photo PS5022-B1		
	510	3-E	48T15938W03	Transistor, Photo PS5022-B1		
	511	3-A	48T15938W02	Transistor, Photo PS5022		
	512	4-G	48T51089F04	Transistor, 2SA937		
□	513	5-D	40T10876W12	Switch, Tact SKHLAJ (EJECT)		
○	513	5-D	40T10876W12	Switch, Tact SKHLAJ (EJECT)		
	514	3-E	40T71025F01	Switch, Detector (LOADING)		
	515	5-G	40T71025F01	Switch, Detector (HOME POSITION)		
	516	5-G	40T71025F01	Switch, Detector (MAGAZINE)		
	517	1-C	40T71025F01	Switch, Detector (LIMIT)		

NOTE : The parts without part numbers are not supplied.

□ : For DR24A02A Model Only, ○ : For DR24A030 Model Only, △ : For DR24A040 Model Only, Others : Common.